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A CROSS-CULTURAL APPROACH TO THE PROBLEM OF STUTTERING*

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Introduction

The Problem in General

The problem as to the causes of stuttering is at present a controversial one. After perusal of the literature, Dr. Fillmore H. Sanford (29) writes:

> . . . researchers are almost unanimous in insisting that linguistic disorders, especially stuttering, are closely related with broad aspects of personal adjustment. There is no unanimity, however, as to what the relation is. In connection with stuttering, there are those who insist that the malady is produced by some disorder of the personality, while others are equally sure that any concomitant personal maladjustment follows in the wake of stuttering. The whole literature pertaining to this disorder is contradictory and difficult.

My limited acquaintance with the literature would also bear out this point of view. Maslow and Mittelmann (19, p. 421) in their 1941 survey of Abnormal Psychology edited by Gardner Murphy say:

**Paper written at Radcliffe College before the author joined the staff of the Fatigue Laboratory.*

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> The psychodynamics of stuttering is, however, a moot question; hence only tentative interpretations can be made.

Hence, if we hope to solve the problem of stuttering via the existing literature, we are doomed to disappointment. Therefore in this paper I shall try to approach the problem from, we hope, a fresh point of view and, though building on invaluable work that has been done by men like James Sonnett Greene, M.D., Smiley Blanton, M.D., and others, carry the investigation beyond the boundaries of our own culture and see what lights a cross-cultural approach may throw upon our own clinical cases.

Method of Cross-Cultural Approach

By using the anthropological, sociological, and psychological approaches in examining data on stuttering in three areas with alien cultures and within our own culture, it has been our continual aim to gain a new perspective on the problem. The most detailed and valid comparative material has been obtained through field work and study of the Navaho. My own limited field work in the area has been supplemented by Dr. Clyde Kluckhohn's extensive work as well as a wide literature on the Navaho (13). Data as to New Guinea tribes have been obtained through Dr. Margaret Mead's writings (21,22,23) and personal communications from her and Dr. Reo Fortune. We also have word from Dr. Lloyd C. Warner and Dr. Joseph B. Birdsell as to their impressions of the incidence of stuttering among nonliterate societies in Australia. Dr. W. Elmer Ekblaw kindly told the writer unpublished data as to certain aspects of the life of the Polar Eskimo in Greenland.

In comparing these findings with the problem as we see it within our own culture we have tried to introduce some specific data to add to the general impression of the problem as gained from the existing literature. To do this we have examined data on 16 cases of stutterers in a boys' boarding school with three control groups of 10 cases each. This material has been approached from the medical, psychological, sociological, and both physical and social anthropological points of view.

It is fully realized that the small number of cases makes none of these findings statistically significant. However, it is hoped that possible trends may be derived from a preliminary study of this nature which may indicate that further work with sufficient numbers of cases may be worth undertaking and prove fruitful in confirming or denying by statistical means conceptual

schemes which may be derived from the present introductory study.

Also it is hoped that more cross-cultural data will be collected as workers in the field come to realize the concrete value in defining problems which comes from the larger view obtained by regarding our problems in the light of the experience of cultures other than our own and thus helping to avoid cultural myopia in analyzing our own difficulties.

Data from Non-Literate Societies

Data from the Navaho

Kluckhohn's extensive work with the Navaho at Ramah, New Mexico, yields an accurate ratio of the incidence of stuttering in that group (14). He finds three cases in a group of 492 Navahos. He writes:

> No cleft palate or other speech defects. For the Reservation I have no equally precise figures but my impression would be that the relative incidence is at any rate no greater than this.

It is of interest to compare this incidence with that of the United States as a whole (24):

> More than 13,000,000 people, or ten percent of the population of the United States, have some sort of speech defect or voice abnormality, according to the survey made in 1930 by a Committee of the White House Conference on Child Welfare and Protection. Unofficial reports since 1930 state that speech defects are increasing and that at the present time, at least one percent of our entire population suffers from stuttering speech alone!

From my own field work with the Navahos in the region of Chaco Canyon to Blanco Canyon, New Mexico, I should agree with Kluckhohn as to the comparative rarity of stuttering. In four weeks, I knew of one case at Chaco and heard of another near Carson's Store. I asked each family whom we visited if they had any friends or relatives who stuttered and all replies were in the negative except for the one instance in regard to the latter case cited above.

Dr. Leland C. Wyman, who has done field work among the Navahos for ten years in the regions of Mariana Lake, Pinedale,

Coolidge, Smith Lake, and at Chaco Canyon, reports that he has never met a child or adult who stuttered.

Flora L. Bailey, who has done field work in the Chaco and Ramah areas, says that she has never known anyone who stuttered so that it was noticeable although several cases have been reported to her.

Clifford Molholm, M.D., of the Crown Point Hospital and formerly at the hospital at Fort Defiance, said I might quote him as saying that he had never seen a Navaho who had real speech difficulty, that is, inability to speak or the presence of facial spasms when trying to make words.

Both Miss Bailey and Dr. Molholm, however, noted a rather general occurrence which is of interest in the cultural definition of "stuttering." Many Navahos although fluent speakers sometimes repeat the initial syllable of a word. Dr. Molholm said he asked the interpreter at the hospital why the people did this as they did not seem emotionally upset and there seemed no apparent cause for stumbling speech. The interpreter replied that "they are hunting for the proper word in expressing their mind. It means that they are looking for a word to express what they want to say next."

This explanation ties in with the morphological study of the Navaho language as the initial pronoun of a verb or noun phrase or a negative prefix, "do," is incorporated into the word itself, becoming the initial syllable of the word. Examples are the initial syllable "bi" as in "bidáhníyáhádí" - the one that he had met - or the initial syllable "do" as in "dóyéńt'į́" - they didn't say anything about him. Sometimes there are as many as nine meaningful parts of one word. As these parts all follow the initial pronoun syllable or negative prefix, it is very conceivable that "they are hunting for the proper word in expressing their mind." This explanation would liken the repetition to our "er-er" when searching for a particular word.

The Navaho habit would correspond to Sanford's valuable concept of a "normal roughness" which he feels is especially apt to come at a "choice point" (28, p. 188). The Navahos' occasional repetition of the initial syllable of some words seems to be a speech habit which causes them no inconvenience or embarrassment. It certainly does not appear to be a nervous manifestation and if it comes under any speech defect heading rather than a "normal roughness," it would be classed as stammering, not stuttering. Stuttering is a break in the rhythm of speech (3) and should not be confused with stammering which depends on defects of articulation. Stammering depends on performance. stuttering depends on emotional disturbances (10).

In collecting cross-cultural data on stuttering, therefore,

it is of extreme importance for the validity of the count to allow for whatever "normal roughnesses" appear in the particular speech of a particular people. Otherwise, overeager investigators might bring back staggering instances of the incidence of stuttering in a culture with almost everyone classed as a stutterer. This must be carefully guarded against in future field work; otherwise the situation will be grossly misrepresented.

Also of interest and extreme importance is the "interaction pattern" of a cultural group, their use of speech and the place it holds in the life of the group. Accurate measurements with the use of a modified Chapple technique of measuring interaction rates would be of great interest. With the Navaho I noted the lack of pressure, the lack of a feeling of immediacy, the lack of staring at the speaker, time for complete orientation and ease, speaking only when one really wishes to, the total lack of the necessity of "keeping up the conversation." As Edler (7, p. 26) writes:

> . . . Time is an element of which he has little conception. Seldom does he hurry. His trading methods distract the average white man, for it takes him forever to come to the point and consummate a trade. If a Navajo visits you, he might sit for many minutes without stating the purpose of his visit, for, in his opinion, it would be impolite to discuss business matters immediately. Such a tempo of living is difficult for us to understand, but it has its merits of ease, tranquillity, and peace of mind.

As an indicator of the relative importance of speech in the adjustment of the Navaho child, it is of interest to note the splendid adjustment of a 12-year-old deaf and dumb Navaho girl whom I saw several times during my field work. She was in a much more favorable position than she would be in our culture. She was a likable child and showed no atrophy of personality development due to her handicap. She was treated fondly, though not patronizingly, by her relatives and playmates. Her mother had her dressed just as attractively as the sister who could speak. Her hair was parted in the middle and held back on each side like her sister's. The hair bows I gave them were put with equal care on each sister. They both herded sheep. The deaf and dumb girl had helped her sister and two boys to make a collection of adobe toys for me. They also showed me with pride the tiny model of a cradle board with a baby doll in it. Our interpreter conveyed their conversation to me with reflected pleasure in his voice, "The girl twelve did

baby!"

Evidently the deaf and dumb girl was being taught to sew. She would also be taught to weave and do housework and so fulfil the responsibilities of her adult role. When I asked the interpreter if he thought she would marry, he said, "Yes, she marry," with an expression of certainty, apparently surprised that I should ask the question.[1]

While field work gives invaluable data both as to interaction patterns and importance of speech within the culture itself, we have also been interested to learn of the incidence of stuttering among Navaho children when they are in the white schools. On the suggestion of Ruth Underhill, Associate Supervisor of Indian Education, I wrote Mr. George Boyce, Superintendent of Schools, Navaho Jurisdiction, Window Rock, Arizona. Neither Dr. Underhill nor Mr. Boyce could provide any statistical data on the incidence of stuttering among the children, as no survey has been made, but Mr. Boyce kindly had inquiries made from teachers who had taught Navaho children in the schools for many years. However, no cases were brought to light.

Helen Bradley of the U. S. Indian School at Albuquerque, New Mexico, has kindly investigated the problem of stuttering among Navahos and other Indians who attend schools in this area. All the teachers she first talked to gave negative replies as:

> No stuttering but plenty of other language difficulties. Most noticeable is a drop in volume at the end of every sentence or clause. This is common all over the Southwest and very difficult to break. (Boarding school teacher 7th to 12th grades.)
>
> Noticed no stammering or stuttering. The children wouldn't let themselves be that much bothered. When

[1] *This child had just begun to talk when prolonged ear trouble began. She was in white hospitals for two years for treatment of the ears and when she returned home she could not talk or hear. Apparently, this case is due to impaired hearing and not similar to the Henrys' work with the two Pilaga Indian children whom the natives considered deaf and dumb. However, after the Henrys established excellent rapport with the children, they talked to the Henrys although they would become mute when natives came near. Both children were orphans and orphans were very looked down on in the Pilaga culture. Evidently these cases did not have the history of ear trouble but apparently their mutism was emotionally conditioned due to maladjustment (11).*

they got tired, they just quit trying. (Miss Howard - worked with Zia, Zuni, and Shiprock children.)

However, Miss Bradley finally did discover three Navaho children who stuttered. Of these, one is in an acute culture conflict home situation, according to Dr. Kluckhohn. (Culture conflict was also present in the case at Chaco.) Also, one Keres speaking child stuttered. She had difficulty in saying the teacher's name to Miss Bradley. On inquiry, she admitted she was afraid of the teacher.

Of the three Navaho stutterers, Miss Bradley judged two to be "cerebrotonic" in type, whereas one had a "stocky" build. Of one of the "cerebrotonics" she writes:

Intelligent, warmer, quicker than average. Well poised.

A letter to Dr. J. Roswell Gallagher from Otis J. Morgans, Principal of the U. S. Indian Vocational School, Phoenix, Arizona, contains the following data:

> Mrs. Sadie Vigil, Indian matron at the Phoenix Indian School, with approximately 30 years of Indian Service experience to her credit, states that she can remember only one Indian person who stutters. He is Harrison Yazhe, full-blood Navajo young man about 21 years of age. He is an arrested tuberculosis case. He stutters when he gets unduly excited or under pressure. At present, he is at our school on a working scholarship basis. He attends Phoenix Junior College and is classified as a sophomore. (Communication, 1942.)

Data from New Guinea and Australia

New Guinea

After careful study of Mead's accounts of child rearing and social pressures among the Arapesh, Mundugumor, Manus, and Tchambuli peoples of New Guinea, it was of distinct interest to see whether the benign Arapesh, the hostile Mundugumor, the Manus, or Tchambuli would show evidence of social strain via stuttering speech. (Mead sources as cited above.)

Mead writes:

> I have never seen stuttering among any of the primitive people whom I have studied. (Mead, Personal Communication, 1943.)

Mead in another letter says:

> I have never seen a case of stuttering or stammering among primitive people although I remember hearing of one among the Arapesh.
>
> It might interest you to know that the courtesy language in Bali contains formal reduplicative elements that are handled like self deprecatory stuttering so that the ordinary polite word is tiang, the super-polite word is titiang. (Mead, Letter to Kluckhohn, December, 1942.)

It is of interest that the "mild" Arapesh report the only case that has even been heard of. This would suggest that while the Arapesh are kind and calm, the fact that the mothers have to leave their babies to work the crops may create a feeling of rejection with consequent insecurity for the young children. However, other factors in the culture itself may be the adverse determinants. Causal factors are usually due to an interplay of various aspects of the culture. It would require further research with this problem in mind to determine why the Arapesh "produce" a stutterer and the other tribes, as far as we know, do not.

Mead's mention of the Bali self-deprecatory stuttering is of interest. Probably the Keres child who stands in awe of the teacher would appreciate what attitude of super-polite respect this is supposed to connote!

Dr. Reo Fortune worked on linguistics with the New Guinea tribes. It is of interest to have his observations as to the incidence of stuttering among these same peoples. He writes:

> I am afraid that I have to give you a negative report on the problem of stuttering. I did not meet anyone in the Mundugumor, Arapesh, Tchambuli and Manus tribes who stuttered. Nor in the Dobuan, or New Hanover or Tabor or Kamamentira river tribes. At a rough estimate I must have talked with about three thousand persons in all in the former four tribes, and with about three thousand others in the latter four. I met a few cases each of epilepsy, haemophilia, running amok, leprosy and insanity, but absolutely none of stuttering.
>
> The pressure and the pace of the history of the Kamamentira river tribe was faster than our own, as they are at war half their time, and about half of them of both sexes die in annually recurrent war. They live in an area not controlled yet by the Australian Govern-

ment. The pace of the history of the Mundugumor, Arapesh, Tchambuli and Manus, as they were studied, was slower, as they live in areas under Government control.

As I have not met a primitive who stuttered I shall be interested if you get a report of one who did.

(Fortune, Personal Communication, 1942.)

Mead's and Fortune's observations are of great interest as they seem to carry our Navaho hypothesis further afield. Whereas Navahos in culture conflict situations seem a possible prey to stuttering, and stuttering is not unknown among the Navaho themselves as is evidenced by the few cases we have discovered and the fact that there is a Navaho word meaning "Stutterer" used as a nickname (Kluckhohn), stuttering seems even rarer among the New Guinea tribes at the time Mead and Fortune visited them. It would be of interest to get recent data as "civilization" has invaded their part of the world!

Australia

Word from Australia comes from Dr. Lloyd C. Warner and Dr. Joseph B. Birdsell who have both done extensive work with non-literate societies there. Warner writes:

There were no cases of stuttering observed by me in any of the tribes I studied in Australia.

Birdsell says in regard to the incidence of stuttering among the Australian natives:

We made no systematic observations upon this trait and quite frankly, I can only rely upon an obviously faulty memory on this point. I have the impression, however, that stuttering was very rare among both the native and hybrid peoples. However, in the back of my mind, I recall a few teachers in the native schools commenting upon the fact that a few of the children seemed to stutter in consequence of having to learn a foreign language, i.e. English. This should not be taken as a statement of fact but merely as impressionistic material.

Of course, Birdsell is correct in bringing to attention the fact that where a particular item of behavior is being studied, systematic observations are invaluable. It was this sort of

approach that first attracted our attention to the situation among the Navaho. However, what later work has been done has not reversed our original impressions. Likewise the fact that all the above quoted observers, although consulted without knowledge of the opinions of the others, seem to concur on the rarity of the incidence of stuttering among these non-literate societies is reassuring.

Also it is of interest to note that Birdsell refers to the bilingual and probably to some extent culture conflict situation in which he believes stuttering to have occurred. One worker with Indians in California has drawn attention to the influence of the bilingual situation in "producing stutterers." The bilingual speaker has an added number of "choice points" and this is certainly an adverse factor. However, it is to be carefully considered whether in these instances certain coincidental culture conflict pressures are not also a part of the total picture which leads to stuttering speech, as well as a different interaction pattern, use, and importance of speech in the "civilized" culture.

Data from the Polar Eskimo, Greenland

Dr. W. Elmer Ekblaw lived with about 250 Polar Eskimos in Northwest Greenland for four years. He knew every person well and had talked and visited with them all. He is sure that there was not one who stuttered.

There was one congenital deaf and dumb case. The boy used his own sign language and could get along all right with his own people as they knew what he meant by his signs.

Dr. Ekblaw says the people were sociable but there was no premium on being a good talker.

He noted numerous instances of arctic hysteria. Sex was not a problem, due to the mores. Also, there was lack of materialistic motivation.

The range of calm and more nervous individuals seemed about the same as in our own society, he said. As a group they were not especially calm and stolid and exhibited a range of degrees of stability and evidences of nervous constitutions.

Everyone loved children.

General Data from Our Own Society

As we view the general incidence of stuttering in our own society, it is of interest to call to mind how our situation may differ from that in other cultures. While some child psychologists seem to treat the typical American child as the "norm"

for all childhood, it must be borne in mind that the peculiar difficulties of the American child and the American parent may be inherent only to a certain degree in either the child or the parent and that the "peculiar" American environment and culture must also be taken into account.

When Dr. James Sonnett Green (9), of the National Hospital for Speech Disorders, writes:

> The adult stutterer usually gives a history of having been a nervous, fearful child, an unduly irritable, excitable child, often living in a psychoneurotic parental atmosphere surcharged with nervous tension. Such is the fertile soil of the agar-agar in which the stutter-type is cultured,

we agree with him, but our anthropological and sociological leanings make us want to press the inquiry and probe a few of the possible reasons why one home in every hundred in our culture produces "a psychoneurotic parental atmosphere surcharged with nervous tension." This is not the case with the Navaho!

As well as the comparatively high rate of incidence of stuttering in the United States, it is of interest to note that

> . . . a study of nearly 30,000 cases treated at the National Hospital for Speech Disorders demonstrates that eight times more men than women are afflicted with stuttering (25).

Dr. Cyril Burt, (4, p. 398) found in England a preponderance of boys who stuttered as compared with girls.

One Set of Case Data Analysed in Some Detail

If one person in every hundred, and eight times as many men as women stutter in our culture, we now face the question - why? Before discussing conceptual schemes as to these problems, it is of interest to examine some specific case data on 16 stutterers in a boys' boarding school.

This work is entirely exploratory in nature and if, from this preliminary investigation, some clues are gleaned as to which tests and measurements yield results that are significant for this particular problem, it will have been worth undertaking. Also, if certain significant gaps appear, future work may be done along these lines.

CHILD DEVELOPMENT

QUESTIONNAIRE 1

NAME: AGE:

(Mentality)
Scholastic Achievement
Average Each Year
Academic Interest

(Ed. Training Sup.)
Reaction to school and its discipline, rule infractions, cooperation with authorities

---

(Physical) Health - Size Build Endocrine Eyes Ears
Defects Hay Fever - asthma - eczema
Illnesses (serious or chronic)

Nervous System: nailbiting enuresis nightmares
insomnia restlessness
temper tantrums

(Personality)
Anxiety - (studies, sleeping, eating, social health)
Incentive - ambition (college, career)
Interests - (athl., mech., exec., art., academic)

Confident Alert Even Drive
Relaxed Bland Friendly
Virile Stable Cooperation

(Insight)
Judgment - (Self appraisal, maturity of opinion and decision regarding himself and his work)

(Social)
Popularity with mates with adults
Friendships
Social initiative

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Questionnaire 1

(Cultural)
Economic income Father's job travel
Cultural - parents' interests

FAMILY:

(Heredity)

F.	Ed.	Job	Interests
M.	Ed.	Job	Interests
Siblings			

(Family influences)
Long illness in family
Placid or active household
Home tense or harmonious
Father, mother dominant
F-M relationship
Divorce
F-Sibling relationship (cranky, bad tempered, indulgent, friendly)
M-Sibling relationship (indulgent, friendly)
Relationship with siblings (resentful, rivalry)
Disciplinary troubles
F or M nervous (speech, jittery, tics)

Method for Present Study
(Dr. Gallagher)

(1) Data obtained on all stutterers in group of 725 boarding school boys - no selection.
(2) For controls 10 boys selected at random from three sections of an unselected research group of 353 boys. The 353 were chosen without selection - all members of three successive junior classes were included; these were studied and subsequently given a personality rating of A (very well adjusted), B (average adjustment), and C (poor adjustment). Ten boys were chosen at random from each of these three groups so that the stutter group could be compared with each. Certain other data such as anthropometric have been used; in some cases these data are based on all the members of some age group within the 353 boys and without reference to personality rating.

Only three of the stutter group were members of the 353 research group.

Dr. Gallagher examined all the subjects and obtained information as to the criteria listed on Questionnaire 1 (pp. 12-13). He gave comparative ratings on these factors as recorded in Chart 24 (pp. 82-83). He also asked the stutterers the questions listed in Questionnaire 2 (p. 52) as recorded in Chart 25 (p. 84). The 30 controls have been intensively studied over a long period of time and the cases of stutterers have gone through all the routine examinations at the school as well as the special interview as to the speech problem.

Edwin M. Cole, M.D., Director of the Language Clinic, Massachusetts General Hospital, ran the laterality tests, and Dr. Carl C. Seltzer has done the anthropometric measurements. Dr. Sheldon estimated the somatotypes for the controls and Dr. Stevens arranged for the somatotyping of the stutterers to be done by a person on his staff with extensive training in somatotyping and past experience of estimating over 2000 somatotypes.

In examining the case histories, as the numbers are too small for statistical treatment, the comparisons will be tabulated for percentages of incidence with histograms for distributions of possible singificance. The data have been assembled with the Rogers' Component-Factor analysis method (26) in mind. However, due to the fact that the boys are away from home, much important data as to family situations and heredity are not available. Also, more analytical and insightful data would be of interest from the actual day-to-day school situation with

pressures, conflicts, etc., interpreted in the light of their effect on the individual. These lacks could be remedied by further investigation.

Due to the gaps in the present data, it is felt that an overall weighting of the diverse factors involved in each individual case is premature. However, just this sort of check and balance system as to the relative positive and negative effects from the different areas of the case history must be held up as an ideal goal to work towards. Until we can put our finger on the exact sore spots in each case history, therapeutic work will be undertaken in an astigmatic, if not blind, fashion.

Which factors are assets and which are liabilities for a given individual? We list our eight categories as Rogers has done in his Component-Factor Analysis (except that in our case Heredity and Physical are combined as we do not have access to sufficient data as to Heredity at the present time):

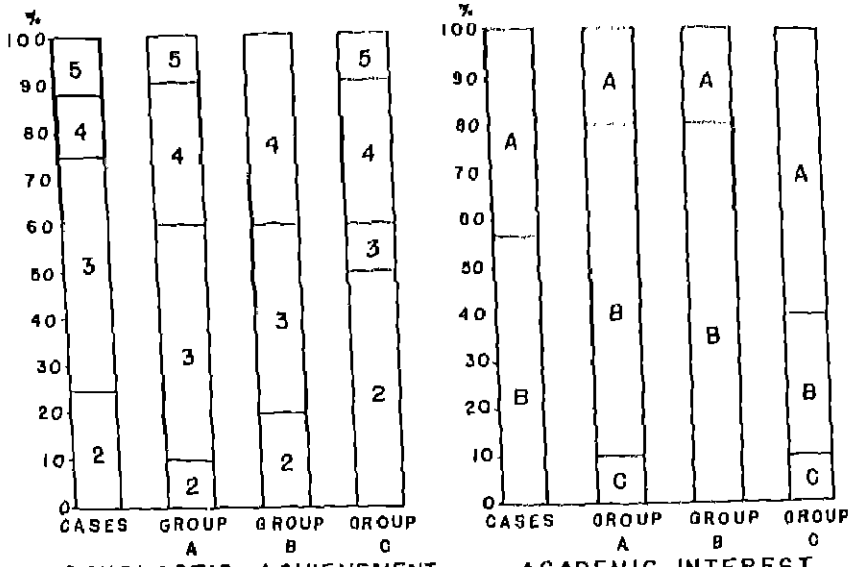
(1) Mentality
(2) Education-Training
(3) and (4) Physical (Heredity inferred)
(5) Social
(6) Economic-Cultural
(7) Self-Insight
(8) Family

Chart 24 includes the full notation of data and the histograms which follow present each category to show the relative percentage incidence present in the four groups studied. Where the incidence has been 100 per cent negative for all groups studied, no histogram has been made. This includes the following items: Ears, all A, Normal; Enuresis, all N, No; Temper Tantrums, all N, No; Illness in Family, all N, No. Also not represented by a histogram are two items where only one instance has been encountered: Endocrine, all A, none, but one B rating, borderline, for the stutterers; Defects, all N but one Y, yes, in the B group. The presence of one borderline endocrine case among the stutterers is of interest. Otherwise the above findings seem to provide only negative evidence.

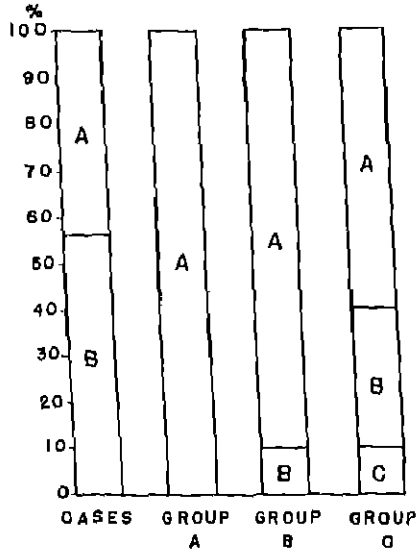
In interpreting the percentages represented in the histograms, anyone curious as to the exact number of instances can check this by reference to Chart 24. In this connection, the fact cannot be overemphasized that larger samples should be secured and that the present study has been undertaken to determine which measures and lines of approach may prove most fruitful in future work with samples of a thousand or more.

Data which present 1) the rating system, 2) findings, and

CHARTS I AND 2



MENTALITY



EDUCATION-TRAINING

3) some possible inferences, are given in connection with the charts.

Mentality

Scholastic Achievement

1. Rating: If usually fails 3 or more: very poor 1
If usually fails 1 or 2: poor 2
No failures, average below 70: fair 3
70-80: good 4
80 or more: excellent 5
(Usually 2 out of 3 times a year)

2. Findings: The cases have a slightly higher percentage with the 5 rating than any of the other groups. No 5's are present in Group B. However, the percentage of 4's for the stutterers is much lower than for any of the other three groups. Therefore the total incidence of 4's and 5's combined is definitely lower for the stutter group than for the three control groups.

It is interesting to note that the incidence of 4's and 5's for Group C is identical with Group A, but there is a diametrically opposed distribution of 2 and 3 ratings. The A group is comprised of 40 per cent 3's and 10 per cent 2's while the C group has 10 per cent 3's and 40 per cent 2's. The percentage of 2 ratings for the stutterers is greater than Group B but decidedly less than Group C.

3. *Some Possible Inferences:* Although the excellent "5" student who stutters has an equal or slightly better chance of excelling than the control students according to these percentages, the potential "4" student among the stutter group is more apt to receive a 3 rating. In the C group, however, the percentage of 3's and 2's might suggest that among possible potential "3" scholars, poor adjustment tends to produce a majority of 2 ratings.

By placing the stutter column between that for Group B and Group C, it is significant to note the stepped increase of 2 ratings from well adjusted Group A to the B group, stutterers, and finally the poorly adjusted group. It would seem to suggest that there is a correlation between poor scholastic achievement and poor adjustment. It might be significant to compare the I.Q.'s of these four groups and thus be able to make a more valid interpretation of how much stuttering or poor adjustment actually lowers the scholastic achievement in comparison to measured intellectual potentialities.

Academic Interest

1. Rating: "How do you really like studies"; "are there any studies you especially enjoy"; "do you dislike going to school" - on basis of these, grade interest as "A" - "B" - "C".

2. Findings: The stutter group and Group C have an overwhelmingly higher incidence of A ratings than Group A or Group B. Groups A and C are the only groups to show an incidence of C ratings.

3. Some Possible Inferences: The stutterers and poorly adjusted boys show a higher degree of academic interest. This will be discussed further in connection with certain aspects of the importance of athletics as it relates to the successful adjustment of the boarding school boy. It is extremely important to consider whether the stutterers and Group C are really more intellectually inclined than Groups A and B, less athletic, and more eager to achieve scholastic recognition and success or whether because they cannot achieve athletic prowess and recognition with ensuing popularity, they take a compensatory interest in academic pursuits. It may also be asked whether lack of security and sensitivity to the teacher's approval make them put more effort and attention on their studies than the competent and confident athletic boy in Group A or B.

It must be noted that in spite of heightened Academic Interest the stutterers as a group have less combined 4 and 5 Scholastic Achievement ratings than the A group.

Education-Training

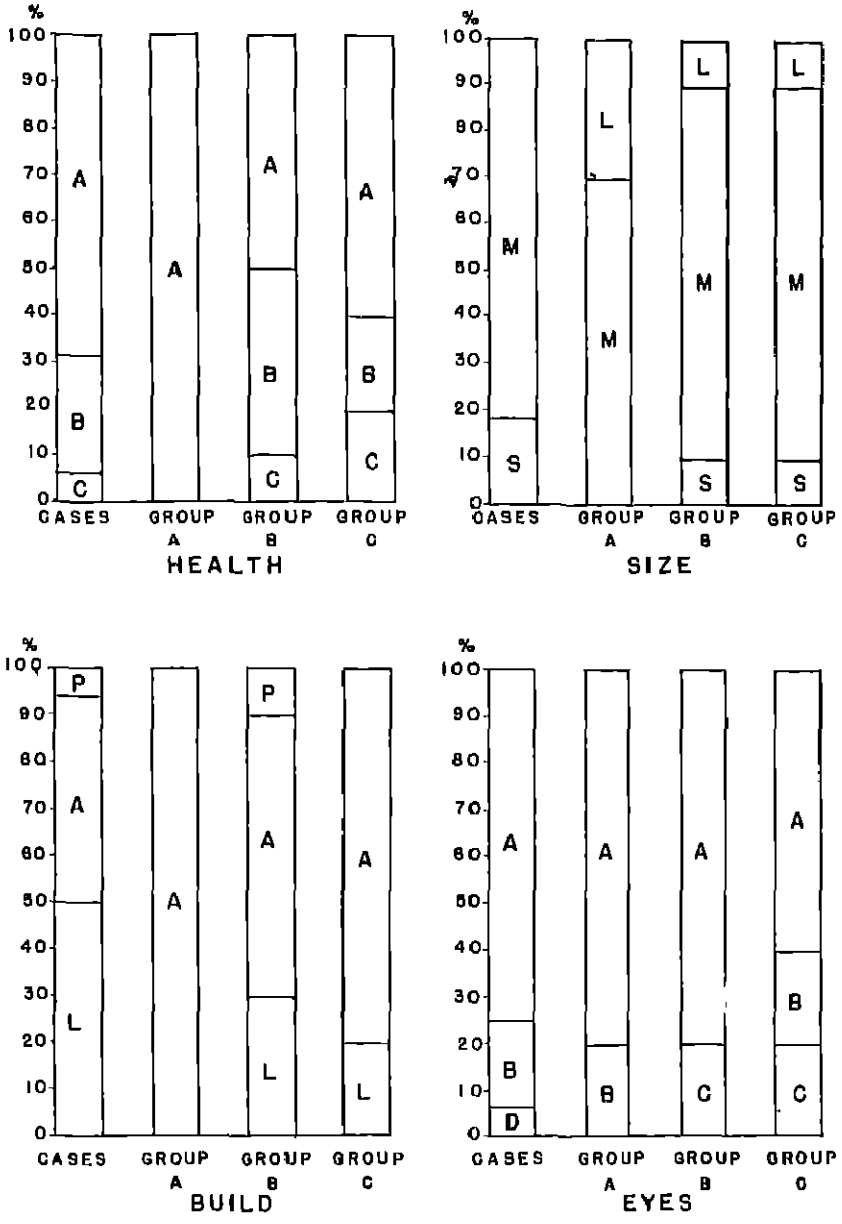
Reaction to School Discipline

1. Rating: Mostly, has he had any disciplinary difficulties at school. Rate "A" - "B" - "C".

2. Findings: The stutter group receive the highest percentage of B ratings of any of the groups. There are no B's in Group A, only 10 per cent in Group B, 30 per cent in Group C, and over 55 per cent for the stutterers. Group C is the only group to receive any C ratings.

3. Some Possible Inferences: It is strikingly apparent from the histogram that the stutterers and boys of Group C are the ones who have presented disciplinary difficulties. It must be noted that this occurs in spite of their apparently high degree of academic interest. This looks like an adjustment problem in which the presumedly "authoritarian" aspects of the school setup are a part of the picture. Some considerations of possible factors in this problem will be dealt with in a later section of this paper.

CHART 3


%
100
90
80
70
60
50
40
30
20
10
0
A
B
C
CASES
GROUP A
GROUP B
GROUP C
HEALTH
M
S
L
SIZE
P
L
BUILD
D
EYES
PHYSICAL

The fact that the stutter group receive the lowest percentage of A ratings of any of the groups would also tend to suggest that there is more trouble encountered in reaction to school discipline by stutterers than among the other groups. However, Group C closely resembles the cases in this respect, showing only about 15 per cent higher incidence of the A rating. Group A with 100 per cent A rating and Group B with 90 per cent A rating indicate that school discipline as such does not create a problem for them. In other words, their all-around good adjustment makes them able to "take it."

Physical

Health

1. Rating: Has he had serious illnesses; has he had very frequent minor illness; has he lost much time frequently from school; does he appear robust. Rate: "A" - "B" - "C".

2. Findings: The percentage of A ratings for the stutterers is higher than either the B or C group. Also, there are less C's for the cases than in the B or C group. However, the best adjusted boys all have A ratings.

3. Some Possible Inferences: The health of the stutterers is better than either the B or C group but not as good as the health of the best adjusted boys, Group A.

Size

1. Rating: On basis of his appearance in relation to others of his age group, is he large, medium, small.

2. Findings: The cases are all medium and small as compared with the best adjusted boys who are all medium or large. Groups B and C have approximately the same percentage of medium sized boys but each group contains 10 per cent large and only half as many small as among the stutterers.

3. Some Possible Inferences: The advantage of size in helping to make a good adjustment to a boys' boarding school in our contemporary culture seems to be borne out by the present data.

Build

1. Rating: On basis of appearance is he leptic, athletic, pyknic.

2. Findings: The stutterers are 50 per cent leptic, whereas the A group is all athletic, and the B group is 60 per cent athletic and 30 per cent leptic. The C group is 80 per cent athletic and 20 per cent leptic.

3. Some Possible Inferences: The question of build will be

discussed further in relation to somatotyping and use of certain anthropometric measurements. However, at this fairly impressionistic level, there are several interesting trends. It is interesting to consider that if the leptic came at about 40 per cent in the C group, this would give us a graduated level of correlation between occurrence of leptic build and maladjustment from the B to C to stutter group. However, the occurrence of 80 per cent athletic in the C group tends to suggest the importance of variables other than body build in determining poor adjustment. Nevertheless, other things being equal, it is advantageous to have an athletic build in a boys' boarding school as evidenced by the fact that all the best adjusted boys are athletic.

Evidently even at this tentative level we must look for a situation in which a balance or interplay of a number of determinants produces the end result of adjustment or maladjustment.

Eyes

1. Rating: Rate A - normal, B - better than 20/100 either, C - 20/100, D - 20/200 or worse.

2. Findings: Group C has twice as many instances of defective eyesight as Group A or B. The stutter group is only 6 1/4 per cent higher than A and B and much less than Group C. Stutter group has only D rating.

3. Some Possible Inferences: While there is higher correlation of defective eyesight with the poorly adjusted groups, cases and Group C, among the stutter group the D rating accounts for all over the "normal" distribution in the A and B groups. This may suggest that defective eyesight may not play any great role as a determinant of stuttering unless it is very severe.

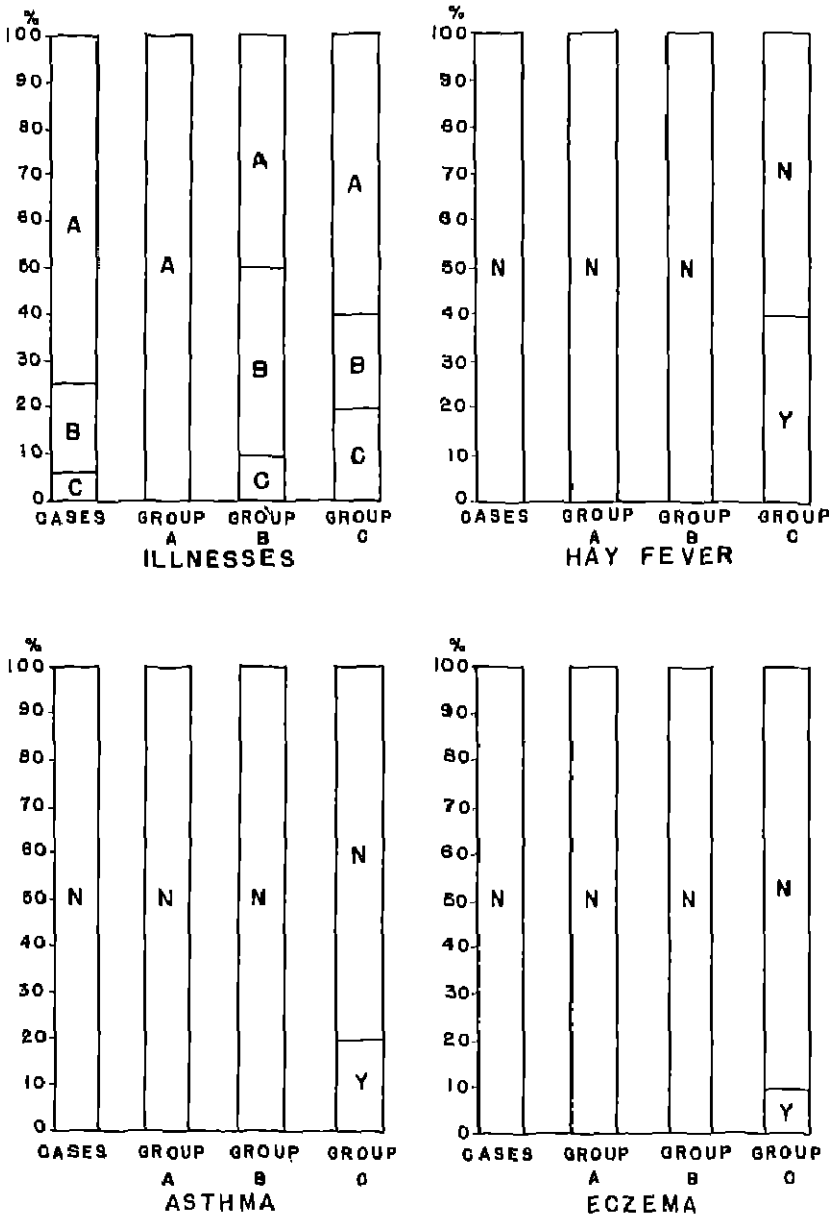
It is to be noted that there is no incidence of eyesight with a D rating in any of the control groups. Therefore it is conceivable that very poor eyesight may be conducive to a certain amount of diffidence and lack of assurance which is a common personality component of the stutter syndrome.

Illnesses

1. Rating: Rate A - seldom ill, no chronic ailment; B - frequent mild or occasionally severe illness; C - very frequently ill; recurrent severe.

2. Findings: It is interesting to note that the stutter group shows less illness than either the B or C group and that the B group exceeds the C group in total illness although with fewer recurrent severe illnesses (C rating). The A group is all A

CHART 4



PHYSICAL

rating.

3. Some Possible Inferences: In considering the high total incidence of illness for the B group but larger C ratings in the C group, it is easy to suppose that frequent mild illnesses or occasional severe illnesses (B rating) would predispose to less maladjustment than frequently recurring severe illnesses (C rating).

Hay Fever

1. Rating: No - N, Yes - Y.

2. Findings: Hay Fever occurs only in Group C. It shows a 40 per cent incidence.

3. Some Possible Inferences: As Hay Fever occurs only in the boys who are poorly adjusted, it raises the question as to whether there is a psychosomatic factor involved in susceptibility to hay fever.

Asthma

1. Rating: No - N, Yes - Y.

2. Findings: Asthma occurs only in Group C.

3. Some Possible Inferences: This incidence suggests psychosomatic implications.

Eczema

1. Rating: No - N, Yes - Y.

2. Findings: Eczema occurs only in the C group.

3. Some Possible Inferences: Whether we are justified in insinuating a possible psychosomatic factor in the occurrence of eczema is doubtful from the presence of only one case. Nevertheless, eczema does not occur in any of the other groups.

(It may be well to list again the Physical items measured which gave slight or negative results:)

Endocrine

1. Rating: Rate A - none, B - borderline, C - definite.

2. Findings: One case of B rating for the stutterers.

3. Some Possible Inferences: Here again one case is insufficient to be of great significance but no borderline cases appear in any of the other groups so it may well be worth recording for a larger number of cases. The hyperactive and overreactive behavior of some stutterers as well as the presence of conflict, anxiety, tension, with symptoms of an overstimulated sympathetic nervous system, make the correlation with hyperthyroidism not unlikely. However, this is an open question for future research with large samples to elucidate. It may be

possible that situational factors which tend to agitate and disorganize the stutterer are also causal factors in the development of hyperthyroidism.

Defects

1. Rating: Rate N - No, Y - Yes.
2. Findings: One Y in the B group.
3. Some Possible Inferences: This one instance is insufficient to have even suggestive value except that it is possible to achieve a good adjustment in spite of the presence of a physical defect.

Ears

1. Rating: Rate A - normal, B - slight impairment (<40 db), C - (>40 db).
2. Findings: All A ratings.

Nervous System

Enuresis

1. Rating: No - N, Yes - Y.
2. Findings: All N.

Temper Tantrums

1. Rating: No - N, Yes - Y.
2. Findings: All N.

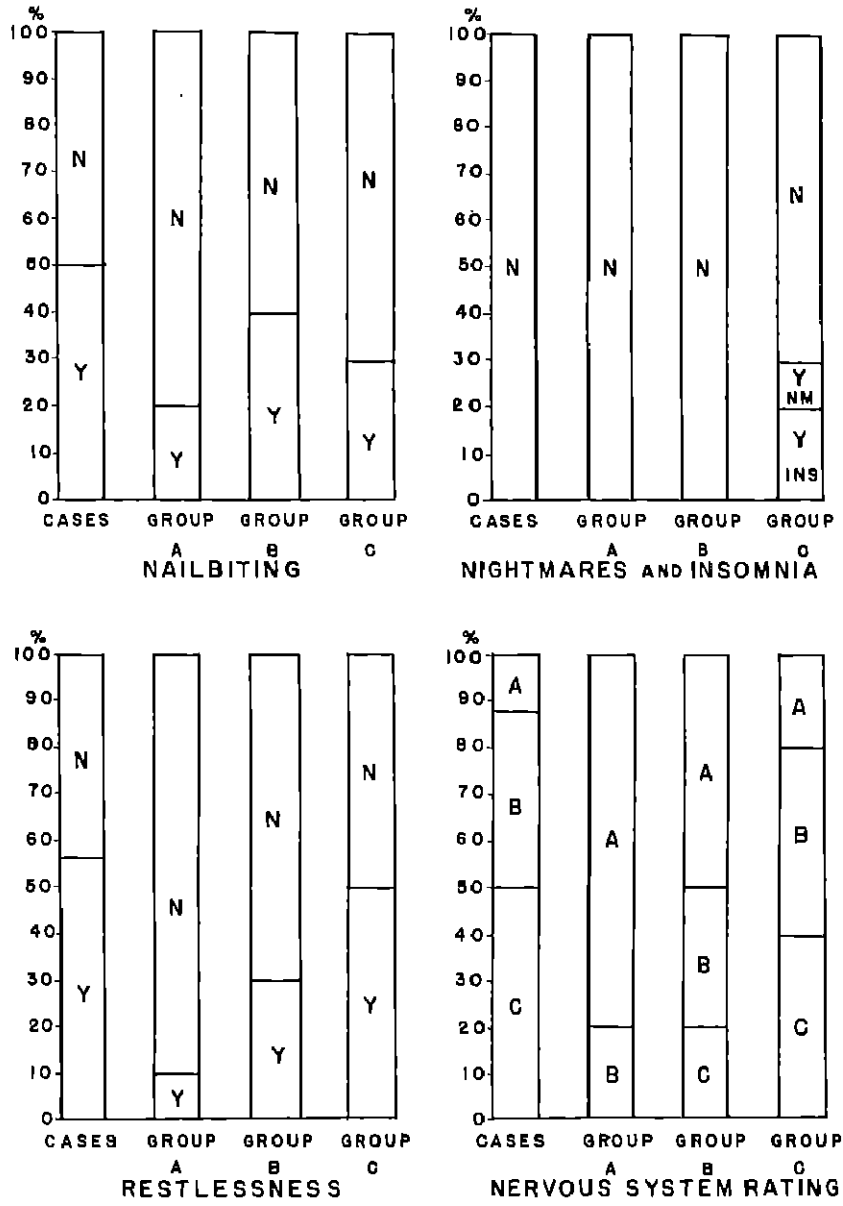
Nailbiting

1. Rating: No - N, Yes - Y.
2. Findings: Half of the stutterers nailbite. However, 40 per cent of Group B nailbite. Group C, where nailbiting might be more to be expected, shows 10 per cent less than Group B. Even Group A provides 20 per cent nailbiters.
3. Some Possible Inferences: It would appear that, while nailbiting shows a high correlation with stuttering, it is a common phenomenon among boarding school boys, being present to a noticeable degree in both well and poorly adjusted groups. As an indicator of nervous tension, it would seem to suggest that a large proportion of even our best adjusted boys are living under certain strains which are reflected more in the two less well adjusted groups and especially among the stutterers.

Nightmares and Insomnia

1. Rating: No - N, Yes - Y.
2. Findings: Nightmares and insomnia show up only in the C group.

CHART 5



PHYSICAL-NERVOUS SYSTEM

3. Some Possible Inferences: It is of possible significance that though the stutterers show no hay fever, asthma, eczema, nightmares, or insomnia, these symptoms appear in the poorly adjusted group who do not stutter. This may shed some light on psychosomatic diseases and their possible relation to stuttering. As Dr. White remarked, "They (psychosomatic diseases and stuttering) seem to be 'all of a piece.'" The maladjusted person in search of a symptom fastens his anxiety in one direction or, due to a process of conditioning, develops a particular response, or the weak spot in his physical makeup shows the strain.

Restlessness

1. Rating: No - N, Yes - Y.

2. Findings: The presence of restlessness presents a clearly increasing incidence from Groups A to B to C with the stutterers showing the highest incidence.

3. Some Possible Inferences: Restlessness seems to be positively correlated with poor adjustment. It is an overt symptom of inner strain which makes its presence a valuable guide in detecting adjustment problems. Dr. Gallagher marked one boy as also having a tic and three boys were checked + i.e. showing a high degree of restlessness. One of the B group was marked "slight" and one +++ i.e. very high.

As restlessness, like nailbiting, occurs in all groups, it would imply that none of the groups are completely serene. Even some of our best adjusted individuals would probably appear harassed to people of a calmer cultural climate as they watched their restless behavior and nailbiting!

Nervous System Ratings

1. Rating: Rate A, B, C, D.

2. Findings: The Nervous System ratings as given in Chart 5 show a graduated increase in lower ratings as the adjustment becomes less good. This histogram deserves careful consideration.

If the cases were at the right, the incidence of A and C ratings would appear stepped with A ratings diminishing and C ratings increasing as adjustment becomes less good. On this basis we call the stutter group less well equipped as to Nervous System rating than the C poorly adjusted group.

3. Some Possible Inferences: The serious problem of interpretation of these Nervous System ratings hinges on whether we are going to say, "Of course those with poorer nervous systems are less well adjusted," or whether we are going to press the inquiry further and from a cross-cultural viewpoint ask, "Was

it necessary that these nervous systems - though less rugged - should be inadequate to a passably smooth adjustment? Would this be true in all cultures? Should we blame the nervous system or the culture?"

Probably it is a question of the nervous system and the culture. This problem will be discussed further when we weigh conceptual schemes.

Social - Personality

Anxiety

1. Rating: A - very little, B - moderate, C - light, D - severe.

2. Findings: There is the least anxiety in the A and B groups although they both show some incidence of the B rating. The stutterers show a great deal more anxiety than Group B but far less severe ratings than Group C. The stutterers have 12 1/2 per cent C ratings. Group C, however, has 40 per cent C ratings and shows 10 per cent D ratings.

3. Some Possible Inferences: The less favorable anxiety estimated for the stutterers and C group are according to Horney specifications (12). She lays anxiety at the root of neurosis. Others may blame an inherent weakness of the nervous system. Probably the truth, as is usually the case in these differences of emphasis, includes the interplay of both factors.

However, as causes of anxiety should be easier to change than constitutional weaknesses of the nervous system, we shall turn our attention to possible sources of this anxiety. The presence of some anxiety in our well adjusted groups and overwhelming percentages in the stutterers and Group C leads us to feel that this is a common factor - as common nailbiting and common restlessness might have forewarned us - and needs our keenest observational analysis and social insight to provide a diagnosis of social ills at their social source. We cannot expect our search for sources of anxiety to be a simple or superficial one but much work has been done on this subject and the cross-cultural lens is a valuable aid.

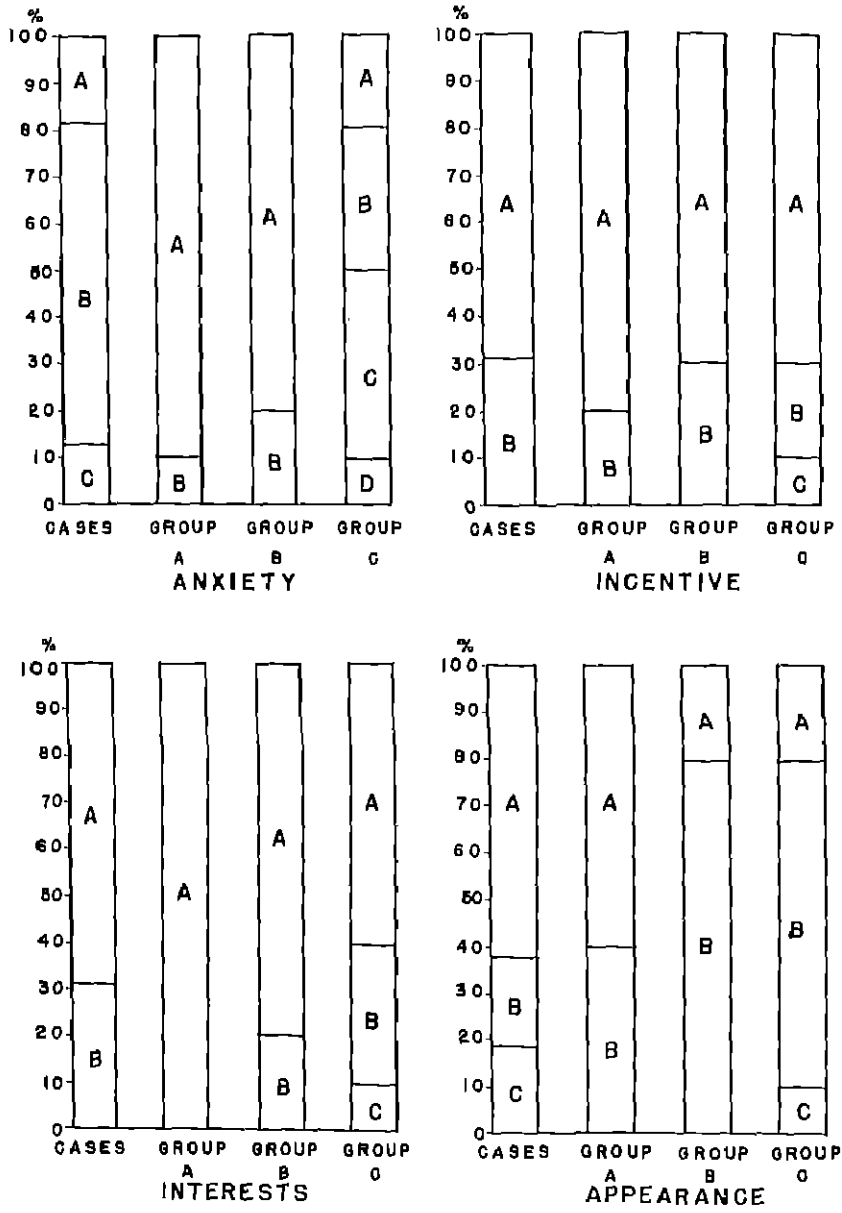
Incentive:

1. Rating: A - considerable, B - average, C - very little.

2. Findings: The Incentives histogram as shown in Chart 6 seems of negative value. There are no appreciable differences outside of 10 per cent more A's in the A group and a C in the C group.

3. Some Possible Inferences: If anything can be inferred

CHART 6



SOCIAL-PERSONALITY

from the preponderance of A ratings in all four groups, it is that only boys with a high amount of incentive get to this particular boarding school with its high entrance requirements and scholastic standards.

Interests

1. Rating: A, B, C.

2. Findings: Interests follows the "step" pattern as to the A rating with the cases somewhat higher in A than the C group and the C's with a C per cent.

3. Some Possible Inferences: The cases and Group C have fewer interests than the better adjusted groups. This tends to suggest the neurotic narrowing of horizons due to anxiety and inhibitions.

Appearance

1. Rating: A, B, C - sloppy, careless.

2. Findings: It is interesting to note that the cases and the A group are equally neat in appearance while the B and C groups have only 20 per cent with A rating.

3. Some Possible Inferences: The data do not bear out a possible impression that stutterers are "sloppy" and careless in personal appearance.

Confident (Assured) - Uncertain

> Assured: Showing self-confidence, self-possession, natural faith in the self; without obvious feeling of inferiority, insecurity, or isolation. Uncertain: doubtful of the self; unconvinced of the rightness of personal judgments and actions; fearful of rejection by others; anticipating failure in any enterprise; insecure.[2]

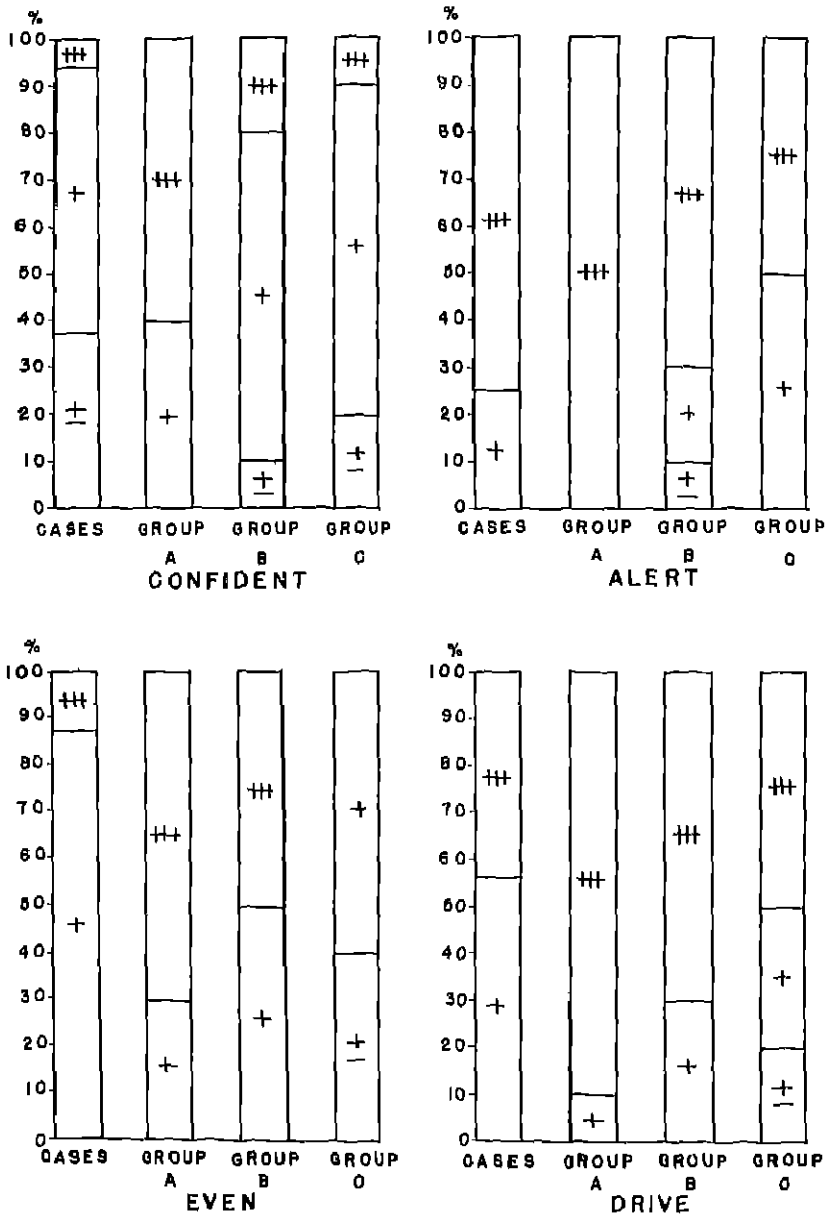
1. Rating: ±, +, ++, +++, - highest.

2. Findings: If we were to put the cases to the right of Group C, the stepped loss of +++ confidence and rise of ± negative confidence, uncertainty, would be very clear. As we see confidence shrink from 60 per cent +++ in the A group to 6 1/4 per cent in the stutter group and 10 per cent in the poorly adjusted group, we have some picture of the happiness or misery which these little symbols connote.

3. Some Possible Inferences: The development of confidence in the adolescent is a challenging educational problem and one with wide ramifications, particularly when looked at from a cultural angle. As an antidote for insecurity and anxiety, con-

[2] *Definitions of character traits used in this section are quoted from a publication by the Grant Study, April 1943 (33).*

CHART 7



SOCIAL-PERSONALITY

fidence is the best remedy. As we see the sydrome of anxiety, insecurity, lack of confidence, and fear of rejection building its tottering house of cards as a life structure for the individual, we cannot offer superficial short cuts to "success" - personal or social - for an individual thus conditioned. He is a social hazard to himself and others.

The problem is: Why don't we, as a culture, build a majority of CONFIDENT people instead of fearful ones? This is our problem and we must scrutinize and analyze it from all angles. It is not enough to know that this social "agar agar" exists; we must do something about it. And where is a better place to start than in the comparatively controlled educational environment? We may not be able to recreate adults and have ideal home situations over night, but values and goals and character patterns can be built into the social framework of a school where cooperatively as a joint enterprise each person learns to become an acceptive psychotherapeutic force for the good of all (10). These same individuals trained in beneficial habits of human relations stand a better chance of becoming the "ideal" parents of tomorrow.

This is possible. Do we dare attempt anything so nobly human? Why not?

Alert - Dreamy

Alert: attentive; bright; interested in conversation; maintaining constant rapport. Dreamy: inattentive; wavering attention; distant rapport; "faraway look"; preoccupied.

1. Rating: ±, +, +, +, highest.

2. Findings: The ratings on alertness are highly positive for the whole group; the only negatives are 10 per cent for the B group.

3. Some Possible Inferences: As in the case of high incentive, this alertness is not surprising in a boarding school with high standards of scholarship and entrance requirements. However, as a widespread personality trait, it may verge on hyperreactivity and a state of nervous tension which is definitely an excited state. When viewed as a chronic condition, it would probably be considered "abnormal" by certain societies with a slower pace. The Navahos laugh at the whites "who always hurry and get all excited."

Our culture is probably the breeding ground for future manics as we goad them to be constantly active, constantly alert, keeping the spring wound tight for years on end. It is not that lethargy should be sought but a certain alternation of alertness with relaxation more in keeping with the exigencies of the occasion would make "more sense" than continual and

widespread intense reaction to stimuli.

Even - Changeable

Even: not labile, runs along "on an even keel." Changeable: characterized by variations in mood either endogenous or reactive to precipitating situations.

1. Rating: ±, +, ++, highest.

2. Findings: Groups A and B are much more "even" than the stutter group or Group C. However, the stutterers are definitely less changeable than the C group.

Drive

1. Rating: ±, +, ++, highest.

2. Findings: The cases are closest to the C group. The ++ diminishes from the A group to B, C, and is least in the stutter group. However, the C group has some ± incidence which is lacking in any of the other groups.

3. Some Possible Inferences: It is not surprising that the 90 per cent ++ drive in the A group correlates with the best adjusted boys. Enterprise, initiative, and ambition are highly esteemed and rewarded in our culture.

Relaxed - Tense

Relaxed: at ease; not strained. Tense; giving the impression of being tightened within the self; stiff.

1. Rating: ±, +, ++, highest.

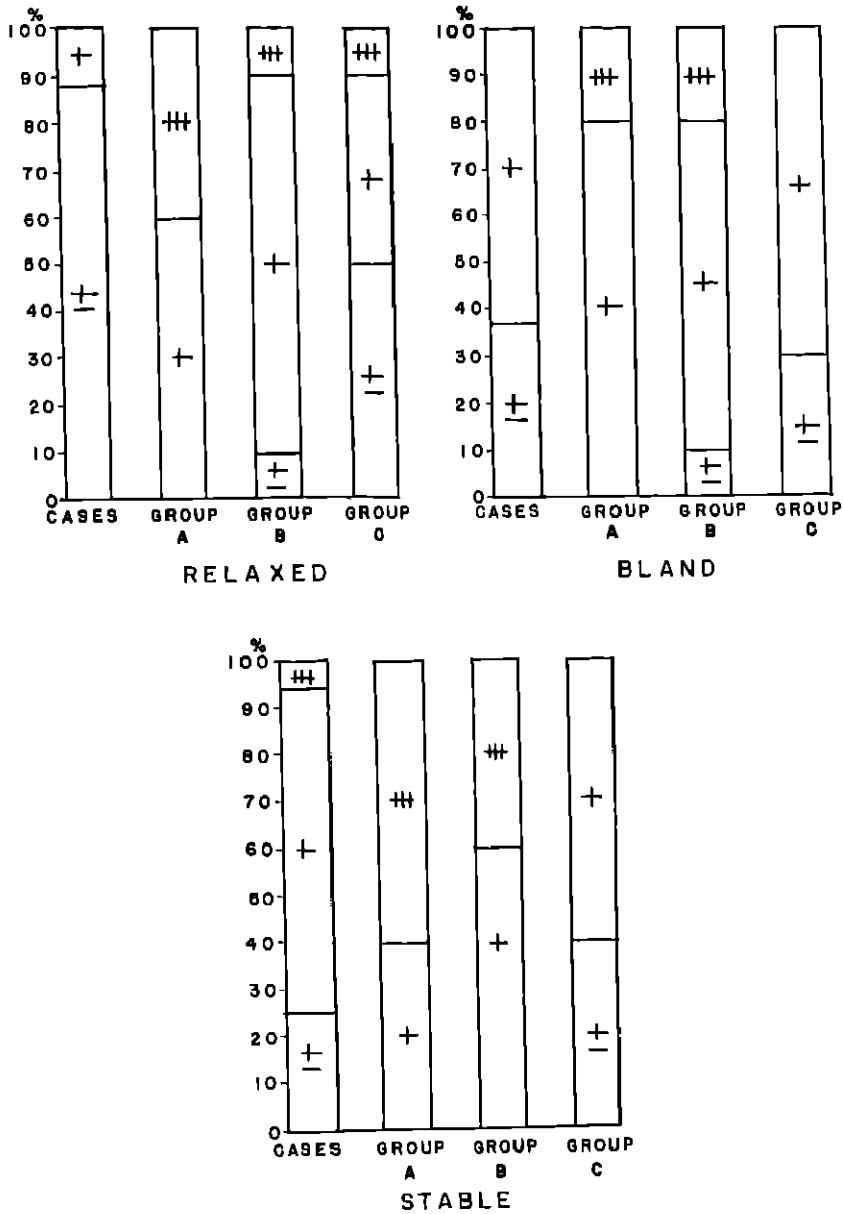
2. Findings: 87 1/2 per cent of the stutter group are tense; 50 per cent of the C group are tense, i.e. ± relaxed; none of Group A are tense and only 10 per cent of Group B.

3. Some Possible Inferences: The sources of the 50 per cent tension in the C group and 87 1/2 per cent in the stutter group must be investigated. Here the physiological symptom of tension is a barometer for stresses and strains of less obvious nature.

The times when the tense person is relaxed are of significant value in helping to determine what are the most advantageous situations, attitudes, occupations, or environments for that particular individual. Needless to say, the apprehensive individual is not usually going to be very relaxed when he knows he is undergoing a medical or "constitutional" examination. We need to follow these tense boys in their daily rounds to see what circumstances are most beneficial and what pressures most damaging to their composure. Tension is a very reliable "maladjustment indicator." It can be ignored only at great peril to the individual.

A 50 or 87 1/2 per cent incidence of the symptom of tension

CHART 8



SOCIAL-PERSONALITY

is not to be lightly passed over. Neither is it easily remedied, but the situation can be alleviated by various means. Certainly in shaping personalities and molding manhood, chronic tension must receive clever attention. Frequent therapeutic interviews with a psychiatrist who is available to talk with the boys when they are "in the mood" might give them a welcome chance to air their worries and bring hidden conflicts to the surface. In conjunction with this, environmental strains should be relieved wherever possible.

Bland - Sensitive

Bland: showing neither warm positive mood nor richness and vitality of affect. Apt to be colorless and neutral; stable, however, since such individuals do not possess complex and highly reactive emotions. Sensitive: possessing a richness and refinement of affect which pervade the whole personality and are revealed in such features as greater complexity, more imagination, more subtlety in thinking, greater emphasis on cultural values.

1. Rating: ±, +, +++, highest.

2. Findings: The bland trait disappears after Groups A and B; C and the stutter group have rising sensitivity - 30 per cent in Group C and 37 1/2 per cent in the cases.

3. Some Possible Inferences: This sensitivity is part of a syndrome of heightened self-consciousness, alertness, tension, and anxious apprehension.

Stable - Excitable

Stable: steady, not easily shaken or overcome. Excitable: easily stirred up, tending to lose self-control and to become impatient easily; temper outbursts.

1. Rating: ±, +, +++, highest.

2. Findings: Group C is somewhat more excitable than the stutter group. The cases show 25 per cent ±, while Group C shows 40 per cent ±. Also, there is a small percentage of +++ stable boys among the stutterers while there are none in the C group.

The A and B groups are the most stable. Neither group has any ± ratings. The A group leads in stability with 20 per cent more +++ ratings than the B group.

The comparative order of relative presence of stability between the four groups follows the order: Group A, B, stutterers, then C. This is clear in the gradation of each rating incidence if, in the histogram (Chart 8), the case column is placed between the B and C groups.

3. Some Possible Inferences: It would seem from the

present evidence that the stutterers, though unstable as a group when compared with the very well and average adjusted boys, are less unstable than the poorly adjusted boys. The similarities, however, between the C group and the cases as opposed to the better adjusted groups might suggest that they have some problems in common and that conditions which might prove beneficial to one might have certain favorable effects on the other. This is only a tentative insinuation which future controlled and measured observations would confirm or deny.

Friendly - Asocial

Friendly: showing a warm response to people, a liking to be with them, and an interest in them. Asocial: preferring to be alone; withdrawing from groups; deriving more pleasure from solitude and individual pursuits than from groups or group activity.

1. Rating: ±, +, ++, +++, highest.

2. Findings: The stutter and the C group are exactly equal in degree of friendliness which is well below the maximum for Groups A and B.

3. Some Possible Inferences: The anxious or maladjusted person has repressed hostilities towards people in many instances and also an overweening Fear of Rejection or Fear of Rebuff (12). This is a sign of social illness and emotional sensitivity and suffering. The boy without friends is caught in a vicious and self-perpetuating cycle of unhappiness. Such "lonely" boys should be spotted and congenial room-mates found at great pains. Here, at least, a start can be made as well as working on the underlying factors which have tended to bring about this lonely tendency.

Cooperative - Independent

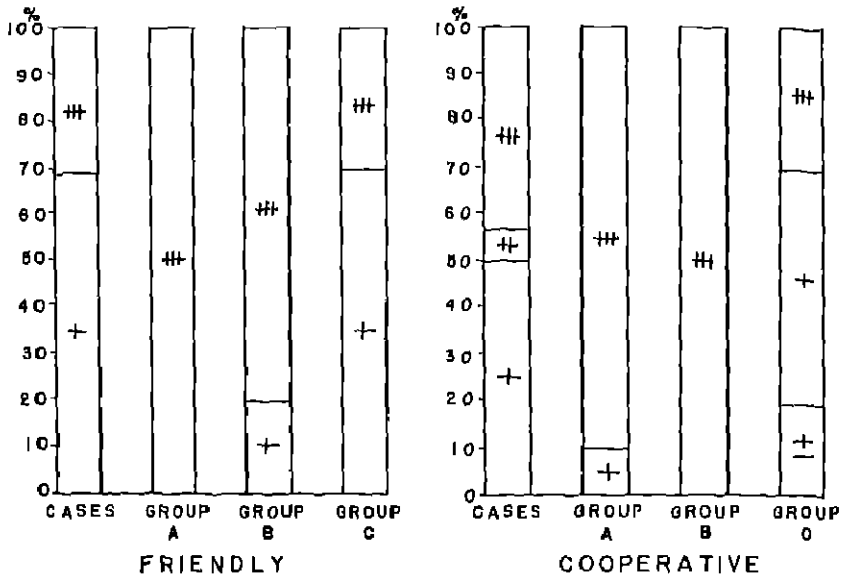
Cooperative: willing to enter in and share work in a common enterprise; able to forego individual inclinations and become part of a cause. Independent: following individual beliefs and inclinations; uninfluenced by accepted opinion and effort; self-contained and self-centered in choice of activity.

1. Rating: ±, +, ++, highest.

2. Findings: The stutter group is more cooperative than the C group but far less cooperative than Groups A and B.

3. Some Possible Inferences: The stutter and C groups manifest the withdrawing and self-centered characteristics of the neurotic who is cramped with fears and inhibitions.

CHART 9



SOCIAL-PERSONALITY

Virile - Effeminate

Virile: giving an impression of strength and forcefulness; rugged; often possessing well-developed musculature. Effeminate: the mincing expressive movements, soft voice, delicacy, grace, or mannerisms usually thought of under this category; homosexuality not implied.

1. Rating: ±, +, ⧺, highest.

2. Findings: As would be expected, the A group is 90 per cent maximum virile. The B group is less so and the stutter and C groups are not high in the virile trait. Most of the rating is + with a little ⧺ and 10 per cent ± in the C group.

3. Some Possible Inferences: The prize goes to the virile boy in our culture. No wonder he is well adjusted. But it must be borne in mind that other boys of other types are also being educated to meet life "head on" and their solution cannot be worked out on the football field. They too must be given a chance to develop confidence and a feeling of security. It is a challenge to the educator in these days of wholesale "military" standards to provide the ways and means for the satisfactory and satisfying development of the less virile boy. The heart of the problem lies in the fact that his accomplishment must be hailed with equal recognition and he must feel an equal glow of triumph to that of the athletic hero or he still will be saddled with an inferiority complex.

Prestige satisfactions can be built up by traditional honoring of pursuits other than athletic ones but these goals and values have to be held in real esteem over a period of time before the individual can feel sure of the comparative value of his accomplishment and hence reap the benefits of confidence and security which should be made attainable for any "body build."

Social

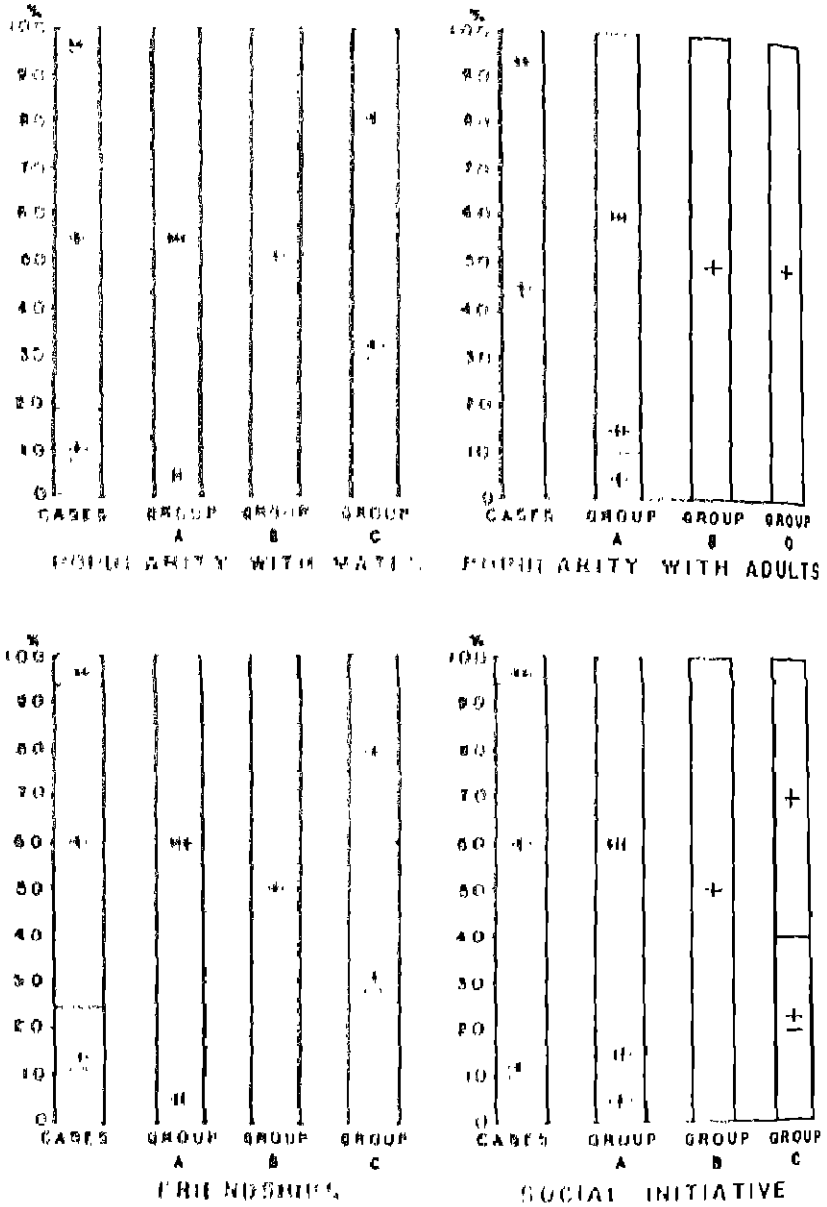
Popularity with Mates

1. Rating: ±, +, ⧺, ⧺, highest.

2. Findings: Group A is naturally in the lead as to popularity with mates. However, it is interesting to note that the stutterers enjoy a good deal more popularity than Group C and are almost as well situated as Group B. Group B is all + (average) whereas the cases have 6 1/4 per cent ⧺ although a more than offsetting 25 per cent ±.

3. Some Possible Inferences: The presence of minus popularity in both the cases and in 60 per cent of the poorly adjusted C group calls for further close scrutiny. As we view the school situation as a whole, it is important to analyze it and

CHART 10



SOCIAL

note whether a circular causal process is in operation (16, p. 111) whereby undesirable tendencies are being reinforced by daily situations and thus intensified rather than alleviated as in a benign situation. These problems do not lend themselves to simple solutions but there are ways to attack the difficulty both through planned favorable occasions where the individual has a chance to display what prowess he may have in some particular line or by consciously throwing him with boys who will not be annoyed by his tendencies.

Where the difficulties are of such a nature as to be a universal social irritant, some psychotherapeutic work or individual counseling and guidance is indicated. Many unpleasant traits can be overcome during these formative years and it is clearly the duty of educators to see that they turn out confident and likeable persons as well as persons equipped with knowledge.

Popularity with Adults

1. Rating: ±, +, ++, +++, highest.

2. Findings: None of the boys are unpopular with adults and the stutter group is 12 1/2 per cent ahead of either Group B or C.

3. Some Possible Inferences: Probably the stutterer tends to seek adult companionship more than those who are more comfortable with their own age grade. In certain ways, adults offer fewer difficulties than age mates. The competitive factor is not present. Also the pattern of respect, manners, etc., which the young person tends to use in relation to the adult, augurs a more propitious reception with less irritation to the adult.

Friendship

1. Rating: ±, +, ++, +++, highest.

2. Findings: A leads and B is +. However, the stutter group well outdistances Group C where friendships are concerned. The C group shows a 60 per cent incidence of ± rating.

3. Some Possible Inferences: With 60 per cent ± for Group C, it seems to suggest that these boys need psychotherapeutic guidance in making the most of their social relations. Conflicts, hostilities, resentments, heightened self-consciousness, inhibitions of one sort and another and other social and psychological factors must stand in the way of their natural relationships with their fellows. They need counseling or a beneficent situation, or both, to bring them into pleasant and confidence-creating experiences with their contemporaries.

Social Initiative

1. Rating: ±, +, ⧺, ⧺, highest.

2. Findings: 40 per cent of the C's are ± whereas 25 per cent of the stutterers are minus.

3. Some Possible Inferences: Due to the stutterers' difficulty in interaction, one might suppose that they would show lower Social Initiative than Group C. However, since this is not the case, it tends to focus our attention on the causes for low initiative among the poorly adjusted C group. This should receive further investigation.

Further Discussion of the Five SOCIAL Charts:

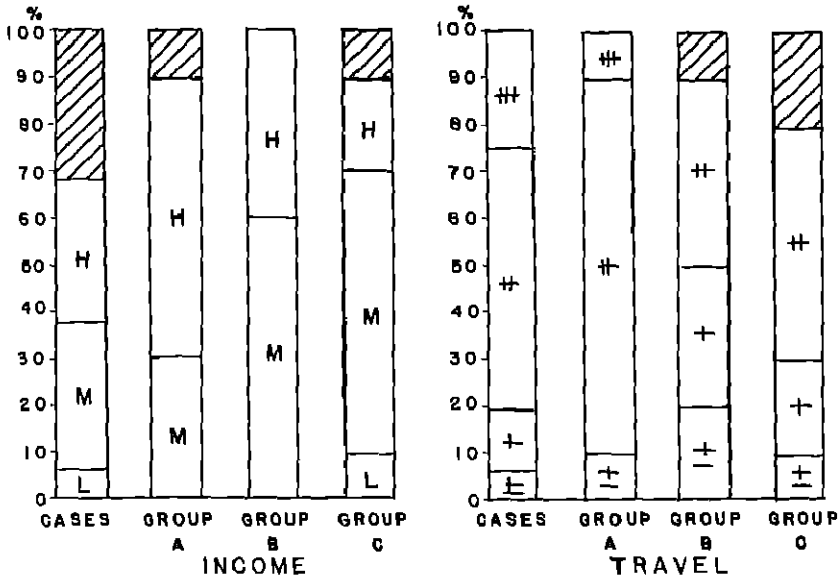
In all five SOCIAL histograms (Charts 6-10) the A and B groups hold their allotted leads with easy strides. Much of this popularity and ease in social relations must be viewed in its constitutional and environmental framework. For which boys is life at this boys' boarding school congenial? Which abilities lead to prestige and recognition? Are certain types of boys fostered and rewarded at the expense of other types?

At present much of this consideration is mere speculation and based on inadequate data but it is sage to hazard a guess that the athletic build has a distinct advantage. We also have seen that academic interest correlated with the stutterers and the poorly adjusted. Why is their supposedly "appropriate" interest insufficiently rewarding to result in poise?

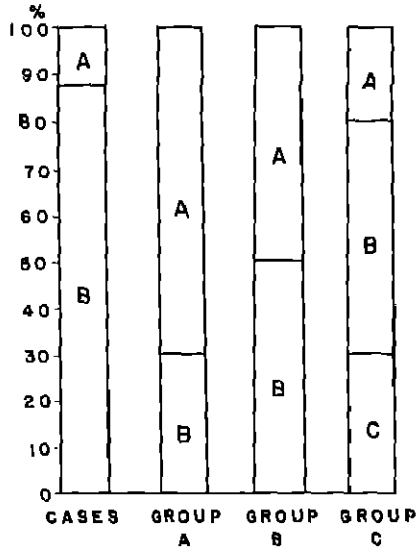
Should there be more open and widespread honoring of pursuits other than athletics? Is not the problem of the educator that of educating each child according to "the best that is in him" to bring out his latent potentialities? To pour boys into a military mold may not be enough! This is a difficult problem today but because it is cruel and ruthless, it should not be shunned. The world is going to need leaders of many kinds. One kind is not enough. But leaders in any line must have confidence born of success in early efforts.

Thus, even if many fields of endeavor cannot be followed immediately, early rewards may outlive the war years and bring the boy back to a line which had given him early satisfaction and recognition. Therefore these values and goals must be made attractive and rewarding in other than military aspects unless we wish to build a predominantly military society for the future. It is impossible to estimate the value of early reward and recognition and the part it may play in shaping a career later in life. The aggregate effect on the society may be of extreme significance in determining future trends of the culture and its culture values.

CHARTS 11 AND 12



ECONOMIC - CULTURAL



DATA LACKING

Insight

Judgment (Self-Appraisal)

1. Rating: Maturity (opinion-decision), A - good, B - average, C - poor.

2. Findings: The degree of insight is stepped with the stutterers' having a lower percentage of rating A than Group C although Group C shows 30 per cent C rating which pulls their average well below the cases. High degree of insight is importantly correlated with Group A.

3. Some Possible Inferences: The role of education in helping to develop in the individual a clear understanding of himself and his problems is no small or easy job; however the importance of insight as a factor in excellent or good adjustment seems to be indicated by our present data. When teacher counseling does not seem to be producing satisfactory results, as in the incidence of C ratings in the C group, it might suggest that psychotherapeutic guidance should be provided. (In exploring certain aspects of this problem, the recent book by Rogers, "Counseling and Psychotherapy," is of interest (27).)

Also the possibility that in certain cases insight into their problems might be a means of helping to reduce the prevalent symptoms of tension, restlessness, and nailbiting should not be overlooked. Rogers writes:

> The individual is under a degree of tension, arising from incompatible personal desires or from the conflict of social and environmental demands with individual needs.

and Lewin says:

> . . . Restless behavior is a diffuse, undirected discharge of tension. . .

However, we do not wish to intimate that insight is going to produce miracles in an oppositional environment. The environmental impacts of a particular environment on particular individuals with particular constitutions should be carefully studied. Lewin suggests the vital importance of "systematic investigation of environmental changes with the same individual." (16, p. 73.)

Economic-Cultural

Income

1. Rating: 1500, low - L; to 20,000, medium - M, over

20,000, high - H.

2. Findings: Although data are not available at this time for 5 of the stutterers and for 1 of Group A and 1 of Group C, nevertheless the trend would seem to indicate that the best adjusted group, A, is predominantly high having 60 per cent with incomes of over $20,000 a year. Both of the better adjusted groups, A and B, show no low incomes (and only 1 case is missing), whereas both the stutter and C groups show the presence of the low income brackets, which is $1500.

3. Some Possible Inferences: It is not surprising that in the competitive setup of a large boarding school the low income group boy has a handicap to social adjustment and the boy whose family has an income of over $20,000, other things being equal, has a distinct social advantage.

Travel

1. Rating: ± Just within state, + Occasionally N.Y.C. or West, +, ++ extensive.

2. Findings: The stutter group and Group A show about 80 and 90 per cent incidence of extensive travel as compared with 40 and 50 per cent for Groups B and C respectively (maximum of only 50 and 70 per cent possible for Groups B and C if the missing data proved to be "extensive").

3. Some Possible Inferences: These findings would tend to show that amount of travel is not a specific determinant of stuttering or best adjustment. Probably the "definition of the situation" is an important factor about which further investigation might be made. It is possible that travel in the sense of changing residence or going for "emergency" reasons would have a very different effect from leisurely recreational travel under "ideal" conditions.

Family

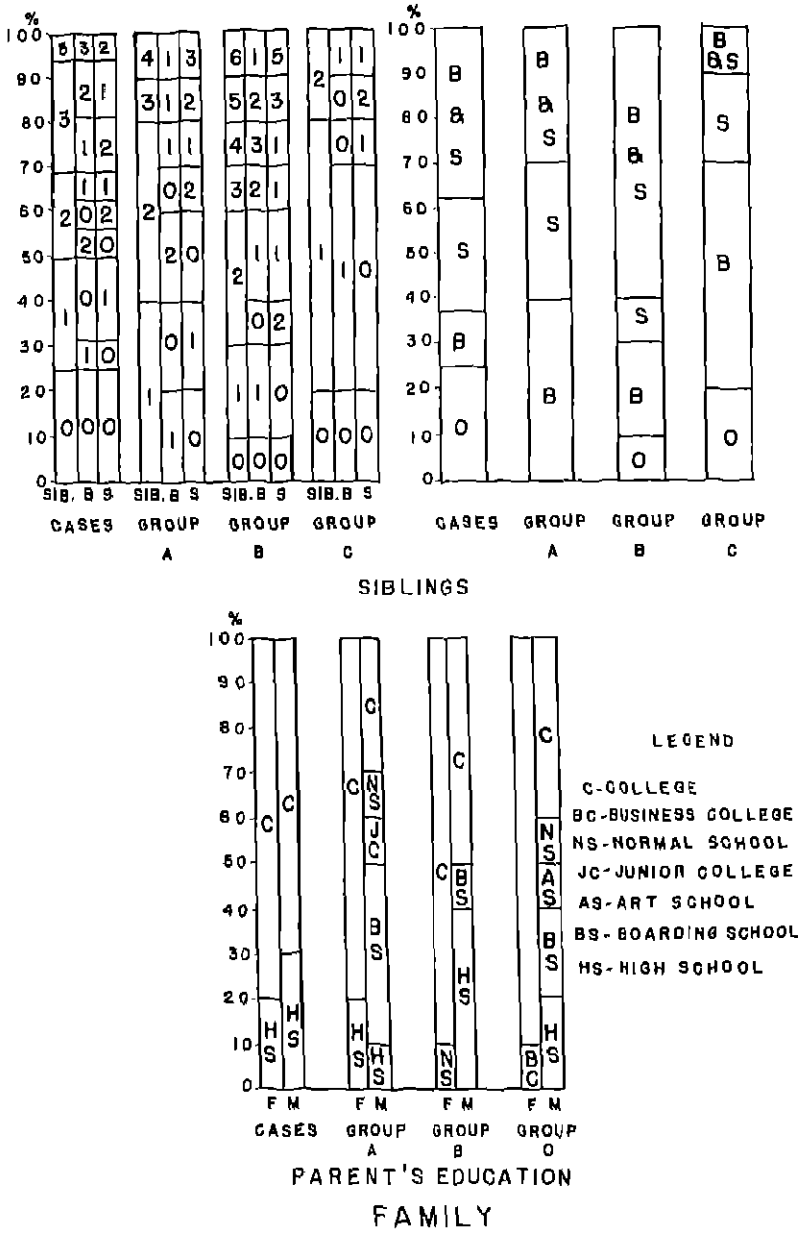
Parents' Education

1. Rating: The legend appears to the right of the histogram (p. 44). The column for the stutter group in this instance represents the ten cases about which we have data as to both parents' education. Therefore the comparisons with the control groups are on a 1 to 1 basis for this item. It was felt that to see the comparison of the "combined" family educational status might be of interest.

2. Findings: The fathers of each group are predominantly college men: 80 per cent for the group of 10 stutter cases and for Group A; 90 per cent for Groups B and C.

However, among the mothers of the 4 groups, the mothers

CHART 13


%
SIB. B S
CASES
GROUP A
GROUP B
GROUP C
SIBLINGS
LEGEND
C-COLLEGE
BC-BUSINESS COLLEGE
NS-NORMAL SCHOOL
JC-JUNIOR COLLEGE
AS-ART SCHOOL
BS-BOARDING SCHOOL
HS-HIGH SCHOOL
F M
PARENT'S EDUCATION
FAMILY

of the stutter group are 70 per cent college women as opposed to 30 per cent - Group A; 50 per cent - Group B; and 40 per cent - Group C.

3. Some Possible Inferences: Whether the college trained mothers are "benign" influences on their children is a challenging question. In a later section of this paper we shall discuss the attitudes and adjustment of the mother. Also it is worth contemplating whether the college mother may tend to be more critical of speech and place high value on certain situations and accomplishments which hinge on speech performance. If this were the case, it might lead to heightened self-consciousness in speech situations and fear of disapproval which might predispose the child to the development of the speech symptom as a result and manifestation of his underlying anxiety.

Siblings

1. Rating: Siblings - Sib., Brother - B, Sister - S.

2. Findings: Group A has no "only" children while Groups B, C, and the stutter group show an increasing incidence of "only" children.

The percentage incidence of families with two children is in the following order: Group B - 20 per cent; Stutterers - 25 per cent; Group A - 40 per cent; Group C - 60 per cent. In two-children families of the stutterers, only one has one brother. Of Group C, five have one brother. None of Group C have more than two siblings, i.e., a family of three children in all.

3. Some Possible Inferences: It is of interest to note that 60 per cent of the C group families are composed of two siblings - the situation in which the classic Sibling Rivalry is apt to come to fullest flower! However, among the stutterers the two-sibling situation is less, and in the one case of two brothers it is the younger brother who stutters. The older brother is 18 years old. The present data would seem to indicate the correlation of small families and total of two siblings with poor adjustment rather than with stuttering in particular. The stutterers show the highest incidence of "only" children.

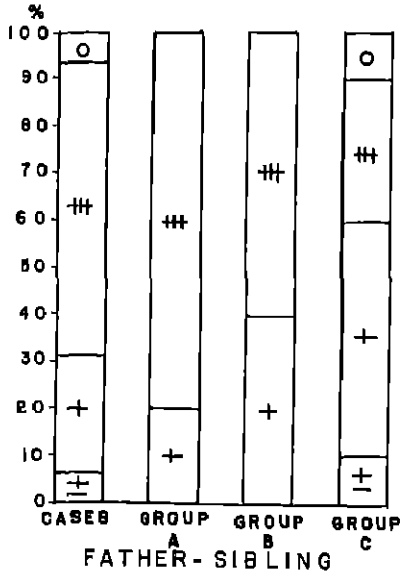
Father-Sibling

1. Rating: Friendly ++, Tolerates + or +, Unfriendly ±.

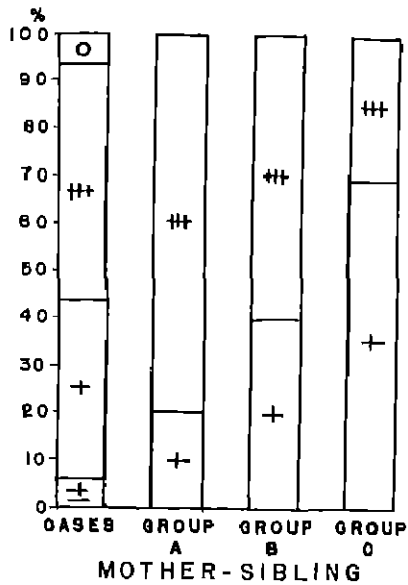
2. Findings: Group A leads with 80 per cent ++ friendly relations between the father and son. Group B has no unfriendly ± incidence but is about equal to the percentage of friendly relations in the stutter group. The unfriendly relations occur only in the stutter group and poorly adjusted C group.

3. Some Possible Inferences: The presence of unfriendly relations in the stutter and C groups is significant as is the fact

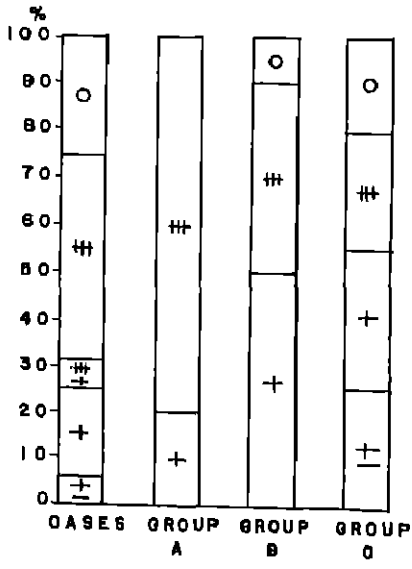
CHART 14



FATHER-SIBLING



MOTHER-SIBLING



SIBLING RELATIONSHIPS

FAMILY

that the C group is decidedly less favored as to Father-Sibling relationships. The role of the father and his relation to his son is extremely important in helping to produce feelings of security and confidence in the son. Where this "emotional support" is lacking, insecurity, anxiety and lack of good adjustment are likely to result if other compensatory factors are not present. This will be discussed further in connection with the mother's role.

Mother-Sibling Relationship

1. Rating: Friendly ++, Tolerates + or +, Unfriendly ±.

2. Findings: It is of interest to note that the cases have 50 per cent friendly relations with the mother and 62 1/2 per cent friendly relations with the father. However, the C group has no unfriendly relations with the mother while an unfriendly percentage is present with the father.

The A and B groups are identical for both Mother- and Father-Sibling Relationships with no unfriendly instances.

3. Some Possible Inferences: The diminishing friendly relations from A to C is significant, with the cases somewhat better off than the C group.

Sibling Relationships

1. Rating: Friendly ++, Tolerates +, Unfriendly ±.

2. Findings: The sibling relationships of the stutter group equate closely with the relationships with the parents. The A group is identical with the parent relationships and the B group has only 10 per cent more tolerates (+) than with the parents. However, the C group shows definitely more unfriendly instances.

In the C group, several comments bear out the sibling strains. One boy "doesn't get along with his older brother." Another boy doesn't like his older sister but does like his younger sister. (In this instance the rating has been divided in percentage on the histogram.)

3. Some Possible Inferences: The poor sibling relationships of the poorly adjusted group are significant.

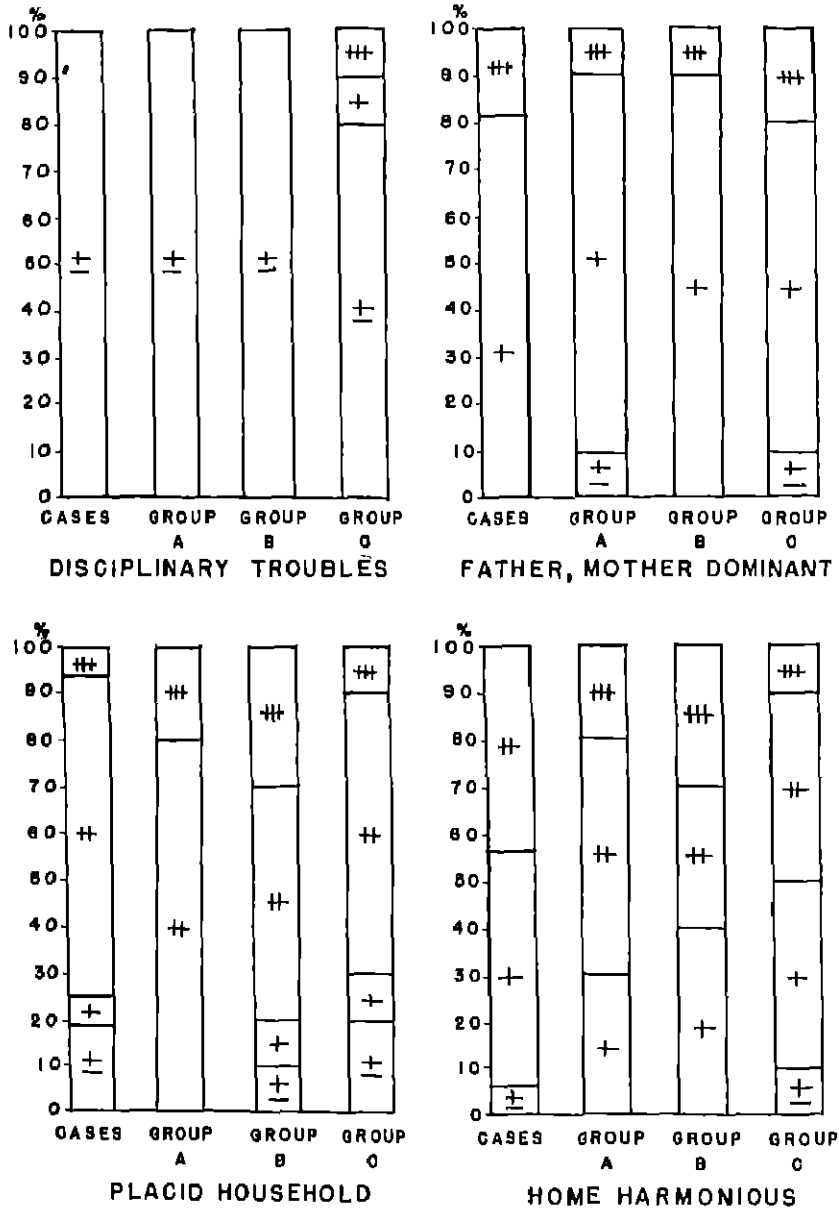
Disciplinary Troubles

1. Rating: ± none, + slight nagging, ++ severe, strict, constant.

2. Findings: Only the C group display +, slight nagging, or ++, severe, strict, constant.

3. Some Possible Inferences: Except for the poorly adjusted group, this presents a rosy picture. However, it must be asked if the home situation were known more intimately whether

CHART 15



FAMILY

"slight nagging" would not be observed more commonly. It is not "rare" in our culture as a whole.

Father, Mother Dominant

1. Rating: Degree of dominance - ±, +, ++, highest.

2. Findings: The cases and Group C show about twice as much high parental dominance as Groups A and B.

Low dominance is present in Group A and also in Group C.

Placid-Active Household

1. Rating: Rate placid ++ (very quiet), + (moderately active, social life, clubs), ± (hectic, always out, hubbub).

2. Findings: The cases have the smallest percentage of placid households. Group A are entirely ++, very quiet, or +, moderately active. The other three groups show some hectic households, the cases and Group C having somewhat greater incidence than Group B.

3. Some Possible Inferences: The low occurrence of placid households among the stutter group is very significant as is also the case with the C group. Direct interviewing and observation in the home over a period of time would be a valuable aid in checking these estimates.

Home Harmonious - Tense

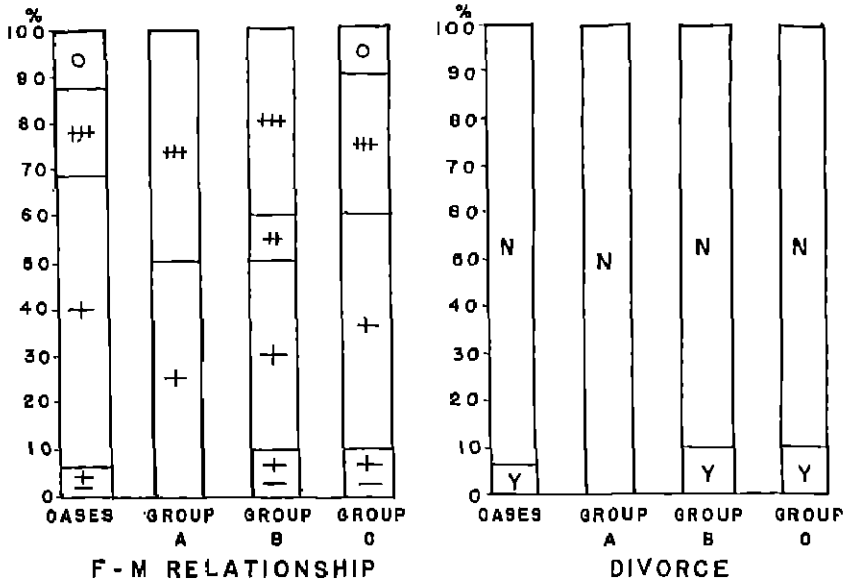
1. Rating: Harmonious ++ (benevolent), + no friction, + average, ± eternal squabble.

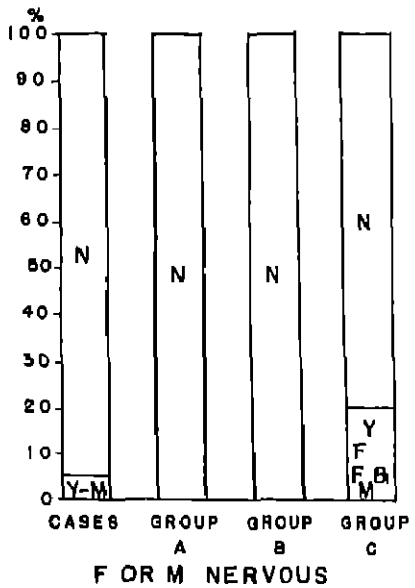
2. Findings: Groups A and B show 20 per cent and 30 per cent benevolent rating, and benevolence is even present in Group C. However no home in which stuttering has developed can be termed benevolent.

3. Some Possible Inferences: Although the percentages are not tremendous, it seems of the utmost significance that not one of the stutterers has a benevolent home situation. Here is where, it seems to me, field work is strenuously indicated or "family case work" in the case of children. Home situations - tensions, strains, repressions, frustrations, the whole grab bag of marital and familial problems are severe irritants for the stutter-type child. And many of these problems are not inevitable or unsolvable. When particular danger zones are clearly delineated and stresses either eliminated or compensated for, much headway may be made in preventive work or early treatment of incipient cases of stuttering.

It is to be noted that only the cases and the C group show ± Eternal Squabble!

CHART 16





FAMILY

Father-Mother Relationship

1. Rating: ± unfriendly, + average, ++ very amicable.

2. Findings: The cases show least ++ very amicable. Group A is the only one with no ± unfriendly.

3. Some Possible Inferences: As we correlate the findings in Father-Mother Relationship with the preponderance of college trained mothers, it again raises the question as to the satisfactory adjustment of the college woman to the conventional role of wife and mother in the middle and upper classes.

Divorce

1. Rating: Yes - Y, No - N.

2. Findings: Divorce is not present in the A group.

3. Some Possible Inferences: Presence of divorce is not conducive to "best" adjustment.

Father or Mother Nervous

1. Rating: Yes - Y, No - N.

2. Findings: One nervous mother shows up in the cases and two nervous fathers and one mother in Group C. Neither Group A nor B have nervous parents!

3. Some Possible Inferences: Nervous parents are liable to have a child who makes a poor adjustment. The one nervous mother of the stutterer definitely influenced the development of his symptom as the case history reveals but since the other 15 stutterers do not have nervous parents, there must be other determinants of the development of the stuttering in children.

As none of the best adjusted boys or boys in Group B have nervous parents, it is safe to say that calm parents are an asset!

Cases - Responses to Interview Questions

As a preliminary investigation of certain aspects of the stutterer's life history, each case was asked to answer a set of 15 questions (p. 52) tabulated on Chart 25. Dr. Gallagher did the questioning. The results offer many clues for future investigation. In some instances additional questions may clarify the present data; in other instances a psychiatric interview on a deeper psychological level is definitely indicated. To continue this analysis by a supplementary set of psychiatric interviews based on the present information might add extremely significant data.

With this in mind the collection of data in Chart 25 should be analysed in great detail. However, at this time it is only possible to call attention to a few of the outstanding trends.

CHILD DEVELOPMENT

QUESTIONNAIRE 2

When did speech trouble begin

Do you know why (imitation, illness, fright)

Any other in family

Has it been absent for periods and then returned

When is it worst - conversation, reading aloud; mates, adults; recitation, strangers

What words bother (sister, brother, etc.)

When is it least troublesome - dramatics; poetry; girls; singing

What letters bother most

Is it a handicap in school

What has been done previously

Previous school record

Present preparatory school record

Reading - spelling - handwriting

Reading - handedness in parents and siblings

Tests: Handedness - Intelligence

Inspection of the data should provide additional information for anyone interested in particular aspects of the results as the answers are tabulated in fairly complete form with only two "symbol" abbreviations employed. "N" stands for "No" or "None," and "AV." means "average."

It will be noted that over half of the cases started to stutter at the ages of 6 or 7, that is, around the time of beginning to go to school. One boy, 11, began when he changed schools and two boys, 10 and 14, started while in boarding school.

It is of interest that six out of the ten reasons given for the onset of stuttering involve threatening situations or difficult individual adjustments. The threatening situations include being frightened by a maid, threatened by a camp counsellor, and forced by the German police to attend a "Hitler" school. The threat to social security involved in difficult adjustment includes anxiety in connection with the study of English, going to a new school, and leaving home and family to come to the United States.

It should be noted that in the case of the boy visiting Germany, the German language created the added complication of the bilingual situation with a new and unfamiliar language. The bilingual factor enters also into the case of the boy who was born in France but whose mother would not allow him to speak French. This would tend to inhibit spontaneous speech and, plus the fact that the mother stuttered, might very conceivably lead to stuttering in the boy.

The other three reasons given represent the mother's interpretation rather than the boy's. They are of interest as in two instances the handedness was changed and one involved imitation of a schoolmate at boarding school. It is significant to carefully consider the fact that the teacher forced the boy to use his right hand. As well as the changing of handedness, this insinuates the presence of the psychological concomitants of the teacher's disapproval and dominative origination to the pupil. This situation in itself constitutes a threatening situation, a threat to social security, from the pupil's point of view. Certain aspects of these psychological factors will be discussed in a later section of this paper.

It is perhaps surprising to find such a low incidence of other cases in the family. In the thousands of cases Dr. Greene has treated, there have been many instances of other cases in the family. Further data from a statistically valid sample may conceivably alter this result.

Several poor spellers and left-handed and ambidextrous relatives are listed, as well as one instance of lisping.

The problem of periodicity should be gone into at great

lengths as times when stuttering is less frequent or absent imply what are favorable environments for the individual or times when his physical "machine" has greater tolerance for rejection, frustration, etc. It would be valuable to carefully compile chronological life history sheets as is done at Johns Hopkins and at the Massachusetts General Psychiatric Laboratories. These list the years in the left column followed by kind of illness if present during that year.[3] To the extreme right appear the significant life events for each year. The recurrence of psychosomatic disease seems to show a high correlation with periods of stress in the life history. These indicate warnings and show at what times and under what situations personal adjustment should be "handled with care." Knowledge of just this nature may be invaluable in helping to pilot the stutter-type safely past the shoals of stress.

The next two questions as to <u>when stuttering is worst</u> and <u>when it is least</u> offer clues along this line. This deserves searching psychological and sociological analysis and interpretation. These few comments can only suggest several of the approaches which might prove fruitful. That more than half of the stutterers say that stuttering is worst during school recitation should direct our searching scrutiny to factors in this situation which may be particularly adverse to the stutterer. Also it is a place where therapeutic practises might be inaugurated during any attempt to alleviate the occurrence of stuttering as well as instituting measures of a more "preventive" nature of possible benefit to the majority of the students as well as to the stutter-type.

Four cases mention "conversation" and one each notes the following occasions: Strangers, When Excited, Arguments, Reading Aloud, Public Speaking. The majority of these connote the presence of the feeling of a threat to social security in relation to one's fellows (the Leighton's category cited on p. 77), heightened self-consciousness, fear of rebuff, rejection, or disapproval, and an increase in "emotional temperature" (Greene concept further defined by the writer through an exact count of the number of occurrences of stuttering in a known situational setting) when excited or during arguments. These situations should be analysed further with a high degree of psychological and social insight.

Equally challenging is the interpretation of the situations in which stuttering occurs least. The fact that six cases report

[3] *Our Questionnaire 2 should have included the frequency and intensity of stuttering as nearly as the patient or relatives or teachers could estimate.*

Dramatics as most favorable is highly suggestive. There are extreme implications in the fact that it is so beneficial to "escape one's own ego." Dr. Kluckhohn has suggested that research along the lines of Moreno's "Psycho-drama" might prove very fruitful.

It is important for the whole approach to the interpretation of stuttering to clearly recognize the emotional and psychological factors that are involved in the occurrence. Though constitutional and other aspects such as handedness and heredity may easily enter into the Stutter Syndrome, the fact that the stutterer does not always stutter cannot be lightly brushed aside. If hemisphere dominance were the only factor involved or if body build were a major determinant, the symptom could appear and disappear only as there also occurred changes in the hemisphere dominance or body build.

That stuttering is a highly complex problem requiring penetrating research by experts in a number of fields is obvious. At this stage of research, it would be extremely premature for anyone to feel that he had found "the" answer.

The fact that four have least difficulty when singing is very suggestive. The fact that in school much of the learning of singing is done by group rather than individual performance leads us to a consideration of the effects of conditioning and the lower incidence of individual "punitive" conditioning as related to singing as compared with situations involving conversation, reciting, or reading.

The instance of "shouting" would tend to remind us of the favorable influence of the dramatic situation. Also, the fact mentioned in the same case that there was less difficulty experienced when the material was well prepared would imply uncertainty, hesitancy, and confusion due to lack of knowledge are adverse factors for the stutterer just as they are to the normal speaker to a slighter degree. In a similar situation, the normal speaker might "er-er" or fumble for words where the conditioned stutterer would actually stutter.

The problem of which letters actually bother is approached today from a very different angle than in the days when speech specialists measured "easy" and "hard" letters. Though there are some articles still written along this line, the more fruitful approach would seem to be by an interpretation of the meaning to the individual either as a symbol of repressed conflict situations as "brother" where sibling rivalry is present, letters to which the individual has been "conditioned" through unfortunate emotional circumstances which led to momentary hesitancy on a particular syllable, or letters which occur frequently in adverse situational contexts

and also about which the learning has not been perfectly clear. An example of this last category would be "wh" which appears twice in our 16 cases. Dr. Greene (8) has pointed out that "wh" is actually pronounced as "hw." This causes confusion about its formation. In noting this point, I have also observed in situations in which "wh" occurs frequently as in asking questions - "what," "where," "when," "why," etc. - there is also frequently present a situation in which the individual feels a Fear of Rejection, Rebuff, Disapproval, or feels in awe of someone in Authority.

The treatment of stuttering is as yet in a very experimental stage. That none of the cases have been "cured" is not surprising.

Four boys feel that their stuttering is a handicap in school. Six feel it is a slight handicap. Two say "very slight." One says it is not a handicap now but used to be, and three boys feel that their stuttering is not a handicap.

The school records show

School		Preparatory School
Excellent	2	3
Good	10	4
Average	1	0
Fair	2	6
Poor	0	1
(Data lacking for 1 boy)		(Data lacking for 2 boys)

The most difficulty seems to be encountered in writing:

Good	3
Average	1
Slow	1
Fair	5
Fair to Poor	2
Poor	2
Very Poor	1
(Data lacking for 1 boy)	

Spelling and reading are predominantly "average" and "good." That reading requires no original organization of thought in a situation of some self-consciousness and stress is doubtless an advantageous factor. It would be important to elucidate this further as to the amount of stuttering actually occurring during reading. If stuttering is relatively absent, this would be of great interest. However, none of the cases list reading as a situation in which stuttering occurs least so

there may be some question of interpreting these ratings. Whether being able to understand the words or to reproduce them without stuttering is being evaluated here, should be checked. Recitation, which it will be recalled displayed some of the highest incidence of stuttering, does require memory and organization so may easily result in more stuttering than reading under a similar situational stress.

Laterality

Edwin M. Cole, M.D., has collected the data as to laterality by means of administering the following tests:

Handedness

1. Cutting. Scissors and ball of string. Place scissors with holes toward chest. Blindfold.
2. Tapping. Counters. Use hand dominant in scissors test first. Blindfold. Tap with forefinger 100 times. Then use other hand. Repeat with second hand and then repeat with first hand. Time with stop watch. (Omit repeats if faster with dominant hand.)
3. Shot Tube. Use flask and glass beads (19 or 20). Have flask in bowl so that beads will not fall on floor. Blindfold. Use dominant scissors hand first. Time.
4. Hammer. Board, hammer and nails. Hammer placed perpendicular to patient. Blindfold. "See if you can drive nail into board." Note hand picking up hammer.
5. Wind string. Blindfold.
6. Ask: Write; Throw; Deal; Knife; Bat.

Footedness

1. Ask: Kick.

Eyedness

1. Visual acuity: s OD OS OU
   c OD OS OU
2. Phoriae.
3. Remarks: Are glasses worn usually? Are they worn for testing?

1. Card hole. Card with hole 1.3 centimeters in diameter. Keep both eyes open. Sight the light through the hole, holding card in both hands. Note eye used.
2. Microscope. Ask if ever used one. Note eye used.
3. Kaleidoscope. Note eye used.
4. Cardboard telescope. Sight distant object and note which

eye was used.

5. Mirror. Nose in ring.

The results of these tests are recorded in Chart 24.

1. Rating: Right "R"
Left "L"
Ambidextrous "A"
R - all right except one
R = all right except two
R ≡ all right except three

L - all left except one
L = all left except two
L ≡ all left except three

A right ambidextrous 2 out of 5 criteria
A right ambidextrous 3 out of 5 criteria

2. Findings: Eight boys were all Right. Six boys had mixed laterality, and two boys were mostly Right with a trace of Left.

3. Some Possible Inferences: Dr. Cole is interpreting this data in combination with other material so that there is a larger sample from which to draw inferences. As the 16 boys here are divided almost evenly between right and mixed dominance, there are no significant trends that appear from casual inspection except the fact that there are no boys with complete Left dominance.

I am not conversant with the literature or theories on laterality so shall leave the significance of these data for Dr. Cole to estimate.

However, it may be of interest to note the situation as to handedness among the Navaho. Flora L. Bailey (2) writes:

> Hill states that left-handedness appears to be more prevalent among Navahos than among whites. Some men prefer not to marry a woman who is left-handed because she is different. That it appears undesirable to some Navahos, is evidenced from the fact that several informants give information about attempts to change a child from left-handed to right-handed tendencies.
>
> The father of one boy tied up his left hand in an effort to make him use the right hand instead. In this same family two other members of an older generation were left-handed, one of whom was successfully changed over and the other not.

One woman states that usually people don't care whether or not a child is left-handed, although the younger Indian parents try to correct it. Older ones don't mind. This would lead one to wonder if schooling had an influence on the pattern. The same informant states that a girl would be more likely to be corrected in a left-handed tendency than would a boy, because a girl couldn't cook and sew as other women do if she remained left-handed. She tried to correct left-handedness in one of her daughters by always handing things to her in her right hand, but decided it was too hard to do "because there is more strength in your left hand than in your right if you are left-handed."

As we consider the question of handedness, it may be pertinent to call to mind the fact that all of the non-literates do not have the problem of writing until they reach the white schools. If, as Bailey's comment suggests, more of an issue of handedness develops after white schooling, the fact of learning to write may have a bearing on the situation of hemisphere dominance and possible changing of handedness.

Somatotypes

From the histograms of the somatotypes for the four groups compared as to the relative incidence of each component, as shown in Charts 17 and 18, the following observations may be made:

Component 1: The cases are higher in the incidence of endomorphy although no rating is over 5. The A group has the lowest ratings on the first component.

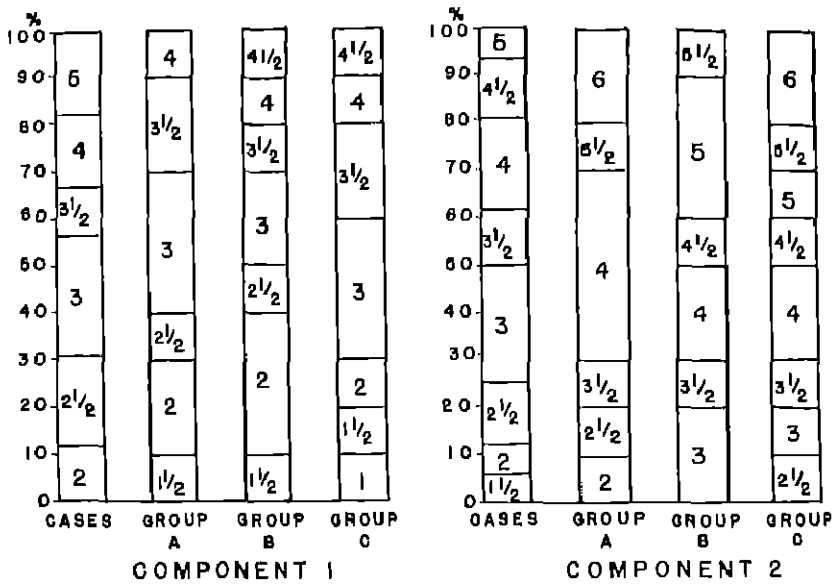
Component 2: Groups A and C are both high on mesomorphy with a fair percentage of "6" ratings. The stutterers are lowest on mesomorphy.

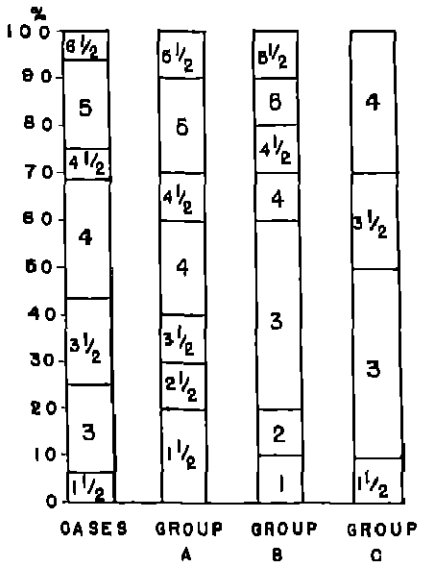
Component 3: The stutter group shows the highest rating on ectomorphy. The cases show an incidence of 6 1/2 rating whereas 5 1/2 is the highest for Groups A and B and 4 is the top for the C group.

The fact that the poorly adjusted boys are not extreme ectomorphs would seem to suggest that the poor adjustments they have made, the psychosomatic diseases which occurred exclusively in that group, and the high incidence of signs of tension are not a result of ectomorphic tendencies in the body build.

Also of interest is the fact that in the case of CDE with somatotype 2^2-5-3, described in Charts 24 and 25, a hectic

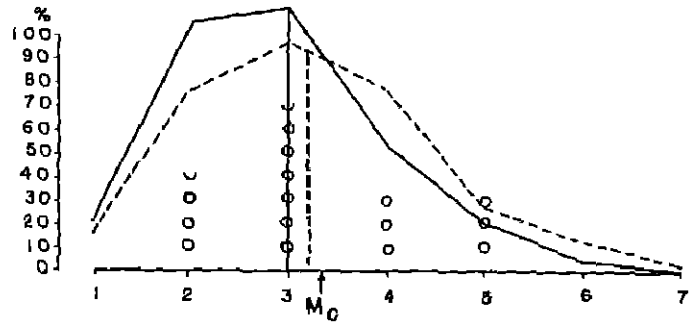
CHART 17



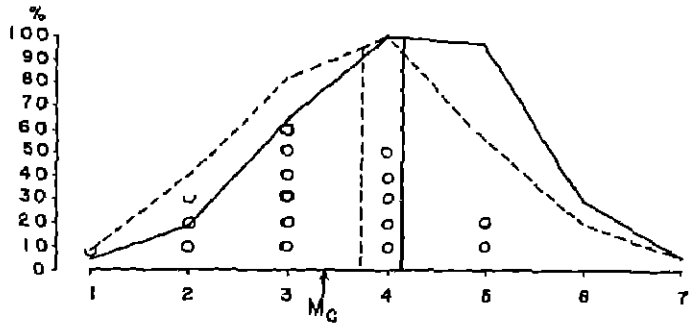


SOMATOTYPES

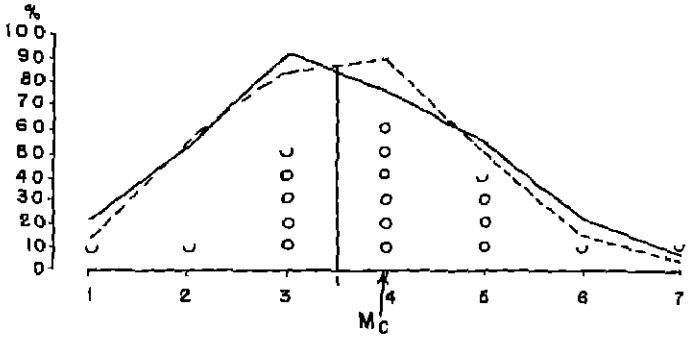
CHART 18



COMPONENT 1



COMPONENT 2



COMPONENT 3

O CASES — 312 BOARDING SCHOOL BOYS -- SHELDON'S 4000 MEN

SOMATOTYPES

household, fairly average or adverse family ratings, low insight, B health and incidence of illness all combine to create anxiety in him sufficient to manifest tics and stuttering in spite of a large body build.

Likewise, in the case of LSM, a "pyknic" build with somatotype 5-4-1[2] showing more than average mesomorphy, we find a "C" rating for Nervous System with stuttering and nailbiting symptoms. However, this boy's mother is in a mental hospital; the family are divorced; he lives with an uncle; the mother stuttered; and this was the boy who lived in France but was not allowed to speak French. If he had not had high frustration and rejection tolerance with a stolid body build, his outcome might have been far worse than the present condition. A high ectomorph in similar circumstances might well have developed a worse fate.

These above cited cases go to show that body build cannot safely be followed as a diagnostic of stuttering. The combination of body build and environmental pressures and adverse factors must be taken into consideration. However, in the comparison of the four groups there is a trend in the stutter group towards slightly higher endomorphy and ectomorphy with a lower occurrence of mesomorphy. These distributions are not far from the mean for college men (Chart 18) but show wider deviation as compared with the curve for 313 boarding school boys.

That there is a difference between the adolescent curve and that for the college men is of interest. It is still a debatable question as to whether the average curves for the preadolescent, adolescent, and adult populations would be identical or not.

Dr. Stevens' assistants felt that although there was a slight deviation from the average in the case of the stutterers, the range was too wide and the incidence too near an average distribution to be of diagnostic value.

Anthropometrics

The anthropometric measurements (Chart 24, pp. 82-83, and curves shown in Charts 19-23) secured from Dr. Carl C. Seltzer, indicate that the stutterers are a physically differentiated and principally biologically inferior group as measured by certain things. Comparing their means with those for a series of 68 sixteen-year-olds from the same school indicates a difference. Unfortunately the σ values are not available so that it is impossible to tell if the differences are significant or

CHART 19

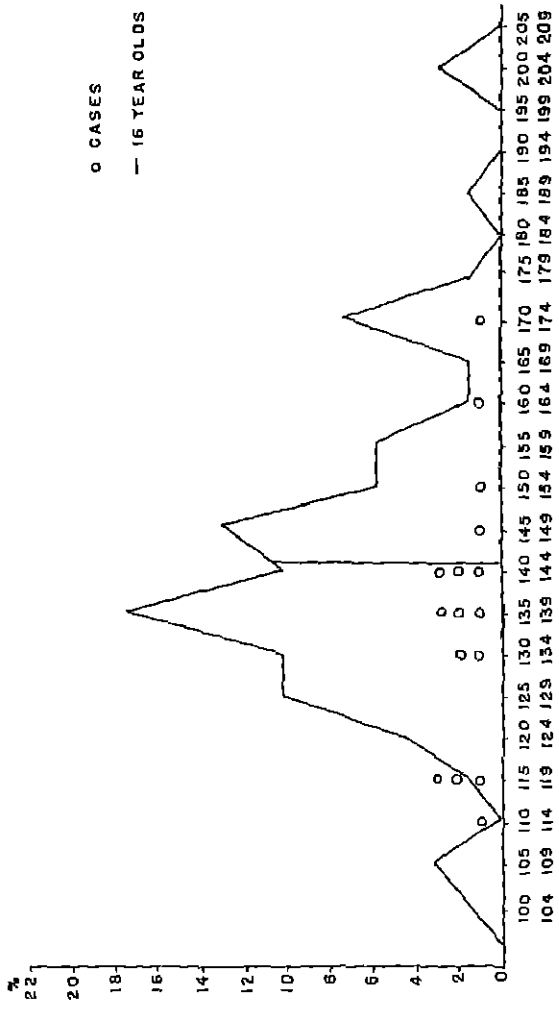

o CASES
— 16 YEAR OLDS
%
22
20
18
16
14
12
10
8
6
4
2
0
100 105 110 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200 205
104 109 114 119 124 129 134 139 144 149 154 159 164 169 174 179 184 189 194 199 204 209
MEAN = 143.60
WEIGHT (LBS.)

CHART 20

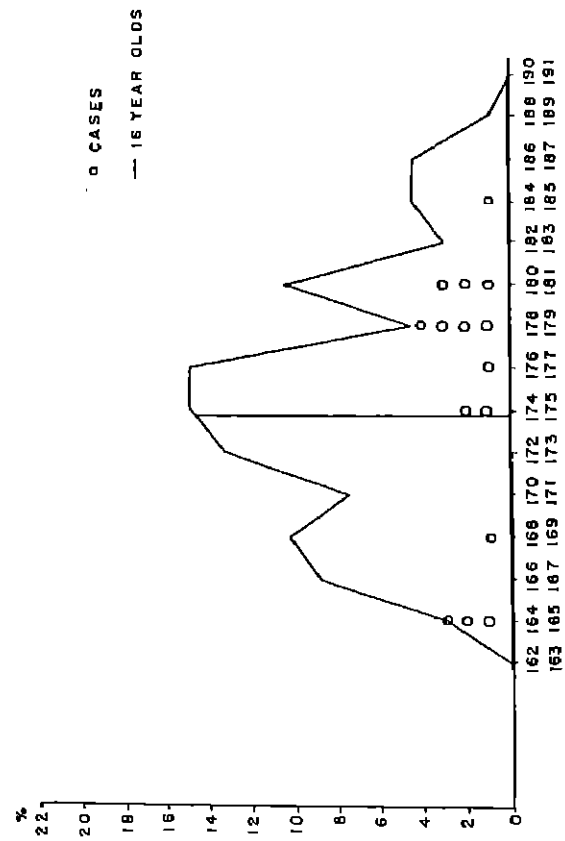
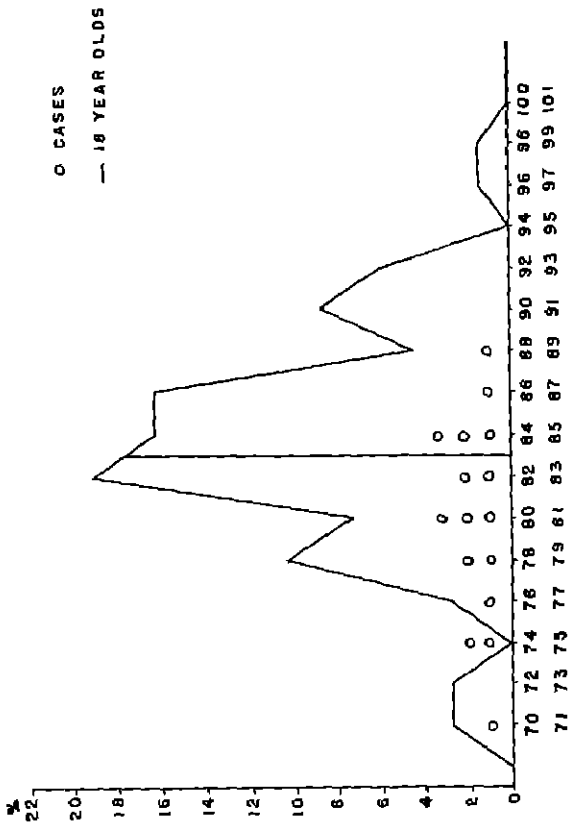
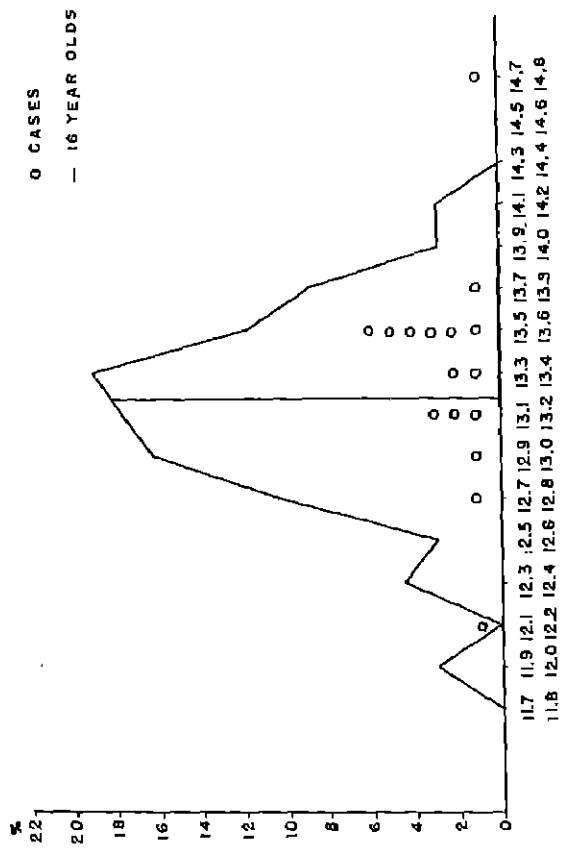

o CASES
— 16 YEAR OLDS
%
22
20
18
16
14
12
10
8
6
4
2
0
162 164 166 168 170 172 174 176 178 180 182 184 186 188 190
163 165 167 169 171 173 175 177 179 181 183 185 187 189 191
MEAN=174.82
STATURE (CMS.)

CHART 21



CHEST CIRCUMFERENCE

CHART 22


O CASES
— 16 YEAR OLDS
%
22
20
18
16
14
12
10
8
6
4
2
0
11.7 11.9 12.1 12.3 12.5 12.7 12.9 13.1 13.3 13.5 13.7 13.9 14.1 14.3 14.5 14.7
11.8 12.0 12.2 12.4 12.6 12.8 13.0 13.2 13.4 13.6 13.8 14.0 14.2 14.4 14.6 14.8
MEAN = 13.18
STATURE / ∛WEIGHT

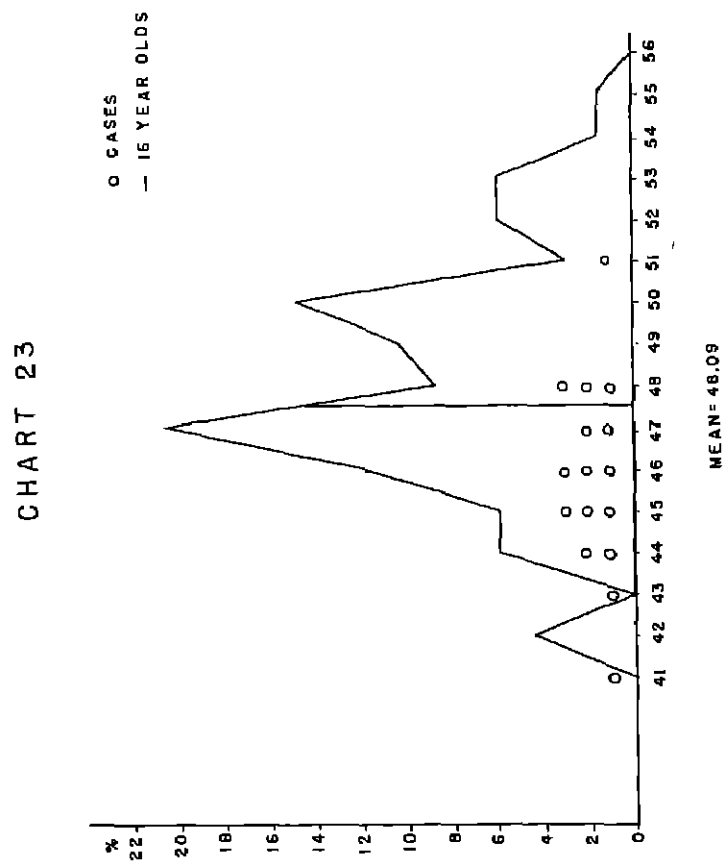


CHART 23
o CASES
— 16 YEAR OLDS
%
22
20
18
16
14
12
10
8
6
4
2
0
41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56
MEAN=48.09
CHEST CIRC. / STATURE

not, but from an inspection of the ratios it seems that the stutterers are lighter in weight, smaller in the thorax, and have narrower shoulders, while their stature is about the same. Their relative sitting height is a little less. This is illustrated more clearly by the curves.

It is interesting to note that of the stutterers 10 of them are lighter, 11 are taller, 13 have narrower shoulders, 12 have less chest breadth, and 11 have less chest depth and lower sitting height than the series of 68. These findings seem to indicate a greater physical differentiation than is indicated by comparing the means. This suggests that some of the stutterers are good physical specimens. That these, who raised the physical average of the group, have trouble suggests that the cause must have been severe in their cases. That such was the case is borne out by the fact that about half of those with the best physiques also gave a story of emotional shock as the cause of the onset of stuttering.

Conceptual Schemes

Introduction

At this point in our discussion we shall try to bear in mind the wise words of Boas and "be always clearly conscious of the sharp line between attractive theory and the observation that has been secured by hard and earnest work" (18, p. 155). It is only as hypotheses grow out of actual observation and can be re-checked by further observation that they can claim to have some measure of validity and reliability.

With this process in mind, we have presented the foregoing data as a check on our original hypotheses gained from work in the field and observation in our own society. The trends which may thus indicate a preliminary vindication by the present study should be considered carefully and salient items checked by statistically valid case and control samples. These should number a thousand or more. As we proceed thus cautiously with our "concept-building" and continually check the hypotheses against further and more reliable collections of data, we can hope to avoid some of the pitfalls of applying "attractive theory" too soon and yet unmistakably recognize where our problems really lie and how it may be possible to tackle them. If these practical applications are made with insight into the real problem and with controlled observation to measure the results, "applied anthropology" may occur simultaneously with the "research" approach. We shall have a living, clinical laboratory provided by our own and comparative peoples and cultures.

In these human laboratories our work must be done. And we must marshal all the tools we have. Anthropology with her brother and sister sciences must join forces. The brother sciences of biology and medicine, the sister sciences of psychology and sociology, and the abstract parent subject from which the Greeks derived science itself, philosophy, must not be omitted from a place among our "conceptual schemers." The life philosophy of the individual and the social philosophy of his milieu have measurable effects on his sympathetic nervous system. We need controlled experiments which combine philosophy and physiology. We will do well to consider whether the method of science cannot come back to philosophy as its grateful offspring and by applying itself to problems of ethics and social philosophy develop a scientifically sound "scientific humanism" (14, p. 175).

It is via the life philosophy of the individual and the social philosophy of his times that in some way a "coming to terms" with reality is achieved. We may call this "adjustment." When this adjustment encounters difficulties, the "emotional temperature" of the person rises just as fever indicates bodily ills. If we can measure the occurrence of these difficulties by some indicator manifest in the physiology or behavior of the individual, it is our duty not to overlook these measurable clues. Both for the benefit of the individual and the benefit of the culture as a whole, we should learn what these clues may tell us. As Sapir (30) wrote in 1927,

> . . . if we make a level-to-level analysis of the speech of an individual and if we carefully see each of these levels in its social perspective, we obtain a valuable lever for psychiatric work.

Development of Concepts

It is not a new thing for speech to be used as a means of revealing psychological situations. The psychoanalytic use of the concept of "blocking" is well known. As to stuttering,

> Freud maintains that the words or sounds that cannot be pronounced are related to painful incidents or shame-provoking experiences of childhood the memory of which has been repressed . . . Another theory of stuttering, proposed by Adler, is that it constitutes a withdrawing mechanism due to an attitude of inferiority. The stutterer, feeling inferior and ill at ease, hesitates to speak lest he be repulsed, hence the inhibition develops . . .

> The theory of stuttering that holds most in common with the objective psychological viewpoint is that of Fletcher which holds that the condition is not a true speech defect but is a personality maladjustment. The stutterer suffers his greatest difficulty when speaking as a social communication. His trouble is therefore a subtle fear of social contact, an emotional response to the presence of his auditors . . . emotion destroys the precision of any movements except those that are very highly learned. In those children whose unfortunate emotional conditionings occur when they are speaking, stuttering will result. When the fear is experienced in other situations, various other maladjustments may be formed . . . The circumstances, then, determine which individuals will develop the particular maladjustment of stuttering. No single experience is sufficient, except in rare cases, but cumulative conditioning over a period of time will fix the habit of stuttering. Later stuttering becomes a circular nonadjustive reaction. Fear causes stuttering, the apprehension that he will stutter when he talks causes fear, and the victim is bound in a vicous circle that is hard to terminate. (31, pp. 247-248.)

Dr. Greene of the National Hospital for Speech Disorders in New York City evolved a theory of stuttering similar in some respects to Fletcher's. In 1923, Dr. Greene pointed out that the problem was "centered in the field of human emotions" (9). Today the general consensus of opinion seems to confirm the idea that the underlying cause of stuttering is a state of anxiety, an emotional maladjustment. Blanton, Brown, Solomon, Clark and West agree with Greene that stuttering is an emotional and personality disorder (9). Greene has clearly outlined his theories as to the Stutter-type Personality in two articles (9, 10), as well as treating various aspects of the problem of stuttering in numerous articles and a book, "The Cause and Cure of Speech Disorders" (8).

Reference will be made to Greene's work and anyone who is interested in the details would do well to consult the above-mentioned publications. Because of the thousands of cases of stutterers who have been treated at Dr. Greene's hospital, he is one of the persons best equipped to shed light on the constitutional aspects of the problem: a large research staff, constantly at work on the problem from both the medical and psychological approaches, is making significant contributions.

Greene's over-all approach may be suggested from the following excerpts:

Theoretically, it is assumed that the stutter-type personality is one born with a special organic structure having constitutional factors which all but parallel the constitutional factors of the nonstutter-type. The stutter-type is an extremely sensitive personality, in which the emotional range always overreaches that of the nonstutter-type. This human organism is not always destined to stuttering speech. Only an environment of opposition accentuating the native conflicts to which one is conditioned can evoke stuttering in its various forms; a neutral or favorable environment does not provoke or condition the individual to stuttering. The oppositional environment may be encountered either in early childhood or in adulthood. Consequently, a particular kind of unfavorable environment may evoke stuttering from this organic stutter-type either in childhood or in adult life. A specially created environment, such as our Medical-Social Clinic, which is favorable, is the means by which the patient is unconditioned. That is, he is brought back to his initial stage or prestuttering state of security. . .

Years of observation and work have convinced me that stutterers are not speech defectives as conventionally understood. They can all speak normally under certain conditions. Their intermittent spasmodic speech is not the result of defective oralization but is conditioned in the stutter-type of personality by highly emotionalized states of mind. They are agitated human organisms . . . Uncannily, they are moved back and forth across the borderline between emotional balance and emotional imbalance (9).

Periods of unusual environmental stress occur several times in the life of the individual. The first occurs in childhood, generally around the time the child goes to school, and consists of the impact of social life with the comparisons of one's self with the others of one's own sex and age which it involves. The second period, in adolescence, is due to the impact of the whole complex of sexual facts on the as yet unprepared young person.

The genesis of the stutter-type most often occurs during the first period of stress, either on account of the underlying neuropathic diathesis or of both hereditary and environmental factors combined (10).

As we get this glimpse of the lines along which Greene is working, it is easy to step from the data in our own culture to the investigation as we have carried it out from a cross-cultural approach. The questions we have asked in tackling the

problem in other cultures have been simple and straightforward,

1. What is the incidence of stuttering in the culture?
2. In what situations has stuttering developed?
3. How do these facts relate to the situation in our own culture?
4. Is there anything that can be done about it?

Inferences from Data in Terms of Conceptual Schemes

As we take a quick glance at the facts we have gleaned thus far, let us limit our considerations in the present paper to the bare essentials. Elaborate minutiae of refined analysis are not justified by the inadequate number of cases available at this time and the comparatively rough data which it has been possible to collect from other societies. However, this does not eradicate the value of the trends which are manifest in the present data.

Let us tabulate the answers to our questions as they appear to us in 1943. When we ask

1. What is the incidence of stuttering in the culture?

we can say

A. It seems to be relatively rare among the Navaho. However, cases are known to occur in the culture and are reported occasionally in the white school and where known culture conflict situations exist.

B. No known case of stuttering has been reported among the New Guinea tribes mentioned above. One case of stuttering was mentioned to Mead in the Arapesh.

C. No cases of stuttering were noted among the Australian tribes visited by Warner and Birdsell. However, a possible incidence with natives in the white schools is suggested.

D. Ekblaw knew of no stutterer among the 250 Polar Eskimos with whom he lived for four years in Greenland.

When we consider

2. In what situations has stuttering developed?

we can note

A. White schools.

B. Culture conflict situations.

C. Several cases of unknown "provenience."

As we press this inquiry and ask

3. How do these facts relate to the situation in our own culture?

we are faced with the fact that education and conflict situations within our own culture must receive our careful scrutiny. For

before we can presume to answer

4. Is there anything that can be done about it?

we must know where we stand. When we recall that Greene has pointed out that there is a high incidence of stuttering during periods of stress and that "The genesis of the stutter-type most often occurs during the first period of stress . . . generally around the time the child goes to school, and consists of the impact of social life with the comparisons of one's self with the others of one's own sex and age which it involves" (10), we are faced with some clear questions. Also, of the 16 cases studied, 9 had their onset around 6 and 7 years of age. We cannot dodge these issues.

People qualified to evaluate these facts in terms of educational psychology are needed to carry the implications of these facts further but we cannot pass lightly over the present cross-cultural evidence which would tend to suggest that in the non-literate societies studied, stuttering is rare within the culture itself but occurs in New Mexico or Australia when the child meets the white school system. This cannot be explained away on the basis of a racial predisposition theory. The Navaho, native Australian, or our own children may become emotionally disorganized under the pressure of the "white school" or the "white culture."

What have the non-literates got that we haven't got or perhaps we had better ask, what don't they have that we have and would be better off without? Maslow and Mittelmann (19, pp. 222-226) may shed some light on certain educational aspects of the problem in their discussion of some of the psychological effects of "Authoritarian Education":

> A widespread belief holds that, more than anything else, a child must learn to obey. Only when he has learned this is he fit to lead, to stand on his own feet. The observations of modern psychology prove that this is for the most part wrong; if one wants the individual to be independent, courageous, and capable of thinking for himself, then he must be trained and educated for independence, courage, and self-reliance and not for submission and dependence. . .
>
> It is unquestionably true that one of the primary aims in education is to make the child a willing, moral, law-respecting member of society, and that discipline and social training are therefore necessary. But more than this is necessary. His education must enable him to feel secure and independent as an adult. This is obviously impossible if the discipline is so rigorous that it endangers

the child's self-esteem and independence . . .

Some miscellaneous characteristics of authoritarian education are: 1) setting up the teacher as omniscient and omnipotent, one who can make no mistakes; 2) giving him unquestioning obedience; 3) regarding him as made of a different clay, as someone who has no passions, who is aloof from the world, who never cries or laughs; 4) being punished frequently; 5) being humiliated; 6) being given grades, report cards, examinations, the general purpose of which, from a psychological point of view, seems to be to make education a competition in which everyone is pitted against everyone else; 7) learning by rote without understanding.

The effects of authoritarian education are varied. It may destroy self-reliance, independence, and courage (self-esteem); it may create "the model child," the masochistic teacher's pet, or a child who obeys his superior but dominates and tortures the weaker children . . .

Psychopathology is fostered in a society in which the old threaten the young, and children are legitimately and conventionally frustrated, humiliated, and sneered at, punished freely, and made to feel worthless and inferior - all this done by "good" men and women. Such a society creates gratuitous conflicts and frustrations, and holds out before the individual a goal which he can never reach, but which is described in such glowing terms that only if he possesses it can he respect himself and feel that he has a place in the world. This society creates aggression and hostility by all these means, but gives the individual no legitimate, socially useful outlet for this piled-up energy, hence it can only emerge later in life in the form of hatred, envy, or jealousy directed against younger or weaker people. This makes the whole system self-perpetuating; for these younger people, grown up, will pass it all on to their inferiors.

This quotation has been included in rather complete form because when we consider that this is the opinion of psychologists in 1941 and has been edited by no less an authority on social psychology than Gardner Murphy, we cannot fail to weigh these "charges" seriously and with an open mind. If our present educational procedure is producing known undesirable psychological effects on all its students, and if, according to Shaffer (31, p. 246) and others, between one and two per cent of all school children are disorganized to the point where they cannot talk with ease, it is time some educational "social

invention" occurred. It is up to the educators to devise ways of coping with their known problems that will have more auspicious results.

However, I feel it is the duty and opportunity of anthropology to provide and share what "cultural tools" it has at hand and to improve and refine these tools and techniques through practical application to concrete problems. We must not forget Warner's great contribution in extending the field of anthropology "to include ourselves" (6, p. v).

A possible approach to the question of the actual "authoritative" aspects of contemporary "white" education would be to employ Chapple's valuable technique of measuring human relations (5). However, as well as a count of the number of originations, I should like to have a means of indicating whether the origination was of a "dominative or integrative" type (1). By "dominative" is meant roughly authoritative or rejective; by "integrative" we mean roughly cooperative and assisting in nature or acceptive. An accurate count could be made in the school situation to see how many originations of a dominative kind the pupil received during the day, how many were integrative, and how many originations the pupil himself made and of which type they were.

By this means we could know "how authoritarian" a particular educational system actually is at a particular time with particular teachers. It is not to be assumed that all teachers are alike in the amount of dominative origination they inflict on the pupils. Shaffer has an important chapter on "Mental Hygiene and Education" which should be read by every educator who is considering problems of interaction in the classroom. As Shaffer points out,

> . . . it must be remembered that teachers are human beings, and, like all others, have their own problems of adjustment . . .
>
> The psychology of adjustment makes clear the relationship between the frustrations of teachers and their typical undesirable classroom habits. Overaggressive behavior and the assertion of mastery are compensatory mechanisms for overcoming an attitude of inferiority . . . The control of children in school offers an exceptional opportunity for compensatory behavior . . .
>
> Principals and supervisors have as great a responsibility for the personalities of teachers as for their methods of instruction. Reprimands and orders are no more effective for a maladjusted teacher than for a maladjusted pupil, but a cordial relationship between teacher and

> supervisor and the making of tactful and psychologically considered suggestions can do much to assist the teacher in working out her own problems. The provision of psychiatric service for teachers . . . can, if skillfully administered, turn some teachers from liabilities into educational assets. Even with the best of facilities for mental health, however, there will remain a few teachers so hopelessly handicapped in personal adjustment that they can be nothing but a menace to their pupils. Since the mental health of a generation of children is more important than is the vocational advantage of one teacher, these individuals must be guided into another occupation for which they may be less poorly adapted.
>
> The teacher of the future must be as much a specialist in mental hygiene as in subject matter or method.

It is of interest to note that the Navaho stutterer from Albuquerque is afraid of the teacher and that two of the cases in our own culture mention having had a "mean" or "nasty" fourth grade teacher at the time stuttering came on or became worse. Also, if, as some clues in our case study might suggest, stuttering tends to become worse or make its appearance in certain classes under certain teachers, the problem of dominative origination on the part of the teacher should be investigated. If the effect on one pupil can cause or aggravate stuttering, it cannot be beneficial for others in the class even though their constitutions or conditioning do not respond with the production of the stuttering symptom.

It is interesting to note here a psychological experiment by Van Riper on "The Effect of Penalty upon Frequency of Stuttering Spasms" (32). A severe electric shock was the "penalty" for the stuttering spasm.

> . . . it was found that there were 99 chances out of 100 that threat of shock per spasm would produce more stuttering than threat of shock regardless of spasms . . .
>
> It is felt that the results of the reported experiment show conclusively that frequency of stuttering spasms is in part, at least, a function of the penalty felt by the stutterer to be attached to them.
>
> The importance of such a finding to therapy is obvious. If one is to decrease the number of stuttering spasms, it is necessary to decrease the penalty attached thereto. Fundamentally, what society penalizes is the interruption to communciation and the abnormal manner in which communication is finally achieved.

Here we may have a partial explanation for the lower incidence of stuttering among the non-literate people we have studied. The penalty for "normal roughnesses" in speech seems to be slight in the non-literate societies as compared with our civilization. Our school setup for the developing child and exacting social and business institutions with elaborate patterns of fixed interaction for the adult provide constant "penalties" for the presence of "roughnesses" or inaccuracies in speech timing. The telephone alone puts the speaker "on the spot" in a way different from what occurs in the less "civilized" cultures.

However, Drs. Alexander H. and Dorothea C. Leighton (15, p. 202) in an article on types of uneasiness and fear among the Navaho demonstrate the fact that the potential feeling of fear of humiliation from inadequate speech performance is nevertheless present among certain of the Navaho. They discuss:

> . . . Threats to social security; that is, any evident danger to a person in his relationship to his fellows . . . One day we asked why a certain man who had a lot to say at home was quiet at meetings and our interpreter said that he was afraid to talk, "afraid he would make a mistake and people would laugh, or talk about it afterward."

This occurrence suggests that if early "punitive" conditioning as to speech situations were more common among the Navaho it might easily raise the incidence of stuttering.

We seldom stop to consider how one or two children in every hundred <u>might</u> be if they had not been subjected to rapid fire arithmetic drills, recitations, and any number of speech situations in which hesitating or faulty performance would be penalized by disapproval or failure.

Having flayed the school and its "punitive" and rejective tendencies, we shall now turn our attention to the home. As all teachers would agree, "the <u>home</u> is really to blame!" However, our perspective is a cross-cultural one, and it is possible that <u>both</u> the home situation and the school situation are less favorable than those found in the non-literate societies we have considered.

Due to the high percentage of college trained mothers among the parents of stutterers, the adjustment of the educated American mother can bear close scrutiny. The presence of <u>unconscious</u> rejection on the mother's part because of the child's interference with cherished ambitions might be very common in the case of "thwarted" college trained mothers. Maslow and Mittelmann (19, p. 247) point out that in cases of unconscious

rejection, "the child usually feels that something is wrong, feels threatened, or actually has a conscious feeling of rejection, even though his mother's rejection is not conscious."

Here we can only deal with the problem in a rapid and general way but interviews with mothers of stutterers might provide interesting evidence which could be statistically valid if collected in sufficient numbers. Kluckhohn (14, p. 173) puts his finger on a crucial point when he writes

> . . . the existent educational system is hopelessly irresolute on all fronts. It vacillates between training girls to be housewives and career women . . .

This certainly has been the case and it has provided areas of difficulty for both groups although the college trained woman with "career" tendencies probably has experienced the most frustration.

As Dr. Talcott Parsons has expressed it, "You can't take girls seriously all through college and then give them a pat on the head and say, 'Now, run along and don't bother your pretty head about it!'" This just doesn't work; it only leads to frustration and lack of satisfaction in the subordinate role to which the woman is assigned, and from which to gain any feeling of fulfilment she has to don the garb of self-sacrificing "saint-hood"! The effect of these repressed "disappointments" on the atmosphere of the home and the development of the children may be insidious and far-reaching in their effects.

It would seem to me that if the woman could at certain times in her life look forward to a part-time job or chance for concrete achievement in some way which would not cheat the children in their early years or disrupt the aspects of conjugal partnership, this might give her the sense of "use in the world" which her college education has led her to think is the legitimate "fruit" of her training. If, through adroit and compulsory college courses in child psychology and child care, she has been led to feel that her job is <u>also</u> to rear happy and adjusted young citizens, she can allot her time through varying periods of her life with better grace and less wear and tear on herself and her offspring.

The early years of married life can be consciously devoted to child care. The middle years when the children are in school most of the day can offer the opportunity for part-time work in her chosen line, assisting her husband if his work is congenial and the arrangement feasible, or preparation for a work she would like to do when the children have <u>left home</u>. For we must remember that they do leave - in our culture -

and it may be difficult to jump into a new endeavor when one is lonely and feels "bereft."

In other words, it seems that our college trained mothers do not heed to be liabilities to themselves or their children if they have had workable "expectancies" developed during their educational years with the different departments in their lives receiving due emphasis and importance. A woman should not have to make a choice of marriage or a career any more than a man does; the only thing is that the woman has to recognize that her career will be a different career worked out on a different time schedule.

Also, in passing, it should be mentioned that if mothers should take time out to be mothers, fathers should also allot some time out of each day to being fathers! This is especially true where there are sons in the family. As Linton (17, p. 155) observes:

> . . . A woman can conceivably provide for the physical needs of her children without male assistance, but she cannot train her sons in the special male attitudes and activities necessary to their success as men. We recognize that even in our own society boys brought up by their mothers are at a serious disadvantage.

The problem also arises as to the possible emphasis on the conjugal relationship at the expense of interest dispensed in the children's direction. When parents have many interests, recreations or pursuits in common, these are sometimes undertaken with resultant neglect of the children. This neglect of the children is often unintentional, but in the upper middle, lower upper, and upper upper classes, it is very common.

It is highly conceivable that children who are consciously or unconsciously rejected by their parents might develop such feelings of insecurity and anxiety that they would be less able to withstand the added rejections and threatening situations in the school environment, and be more apt to develop stuttering when put into a "punitive" speech situation.

It is known that rejection can precipitate stuttering in a child. Maslow and Mittelmann (19, pp. 247-249) cite the case of a girl who is rejected by her father. They write:

> Eleanor cannot speak to her father without stuttering badly. This enrages the father. She does not stutter when talking to the mother or children . . .
>
> In the Stanford-Binet test Eleanor was very confused. She could not control her attention but talked incoherently

> about anything that came into her mind. She had a pronounced stutter which disappeared during the course of the examination.

Apparently, the effects of rejection in helping to create the stuttering symptoms cannot be overstressed whether the rejective experiences occur within the family or at school. Where both home and school present rejective experiences, the result is cumulative and re-enforcing. In such circumstances we should not be surprised to find evidence of stuttering.

For, while I used to think that the Navaho pattern of slow speech was a determinative factor in the lower incidence of stuttering, it now would appear that the type of interaction is of prime significance.

This is borne out by the fact that among the Polar Eskimo with whom Ekblaw lived continuously for four years, the interaction rate was extremely high. They "chattered together" continuously. The women were always telling each other bits of "news." If the group stopped for lunch, a game was immediately started to use any spare time any of the members might have. However, the type of interaction must be considered. They never punished their children. Neither did they praise them: they accepted them. The Navaho also accept their children and punish them only for a few important reasons. Neither the Navaho nor Polar Eskimo has a high frequency of "punitive" reactions in relation to faulty speech.

In other words, interaction, either fast or slow - plentiful or sparse, without rejection or punitive social disapproval, is not in itself harmful. It appears to be the "type" of interaction that counts. As Maslow and Mittelmann (19, p. 226) point out,

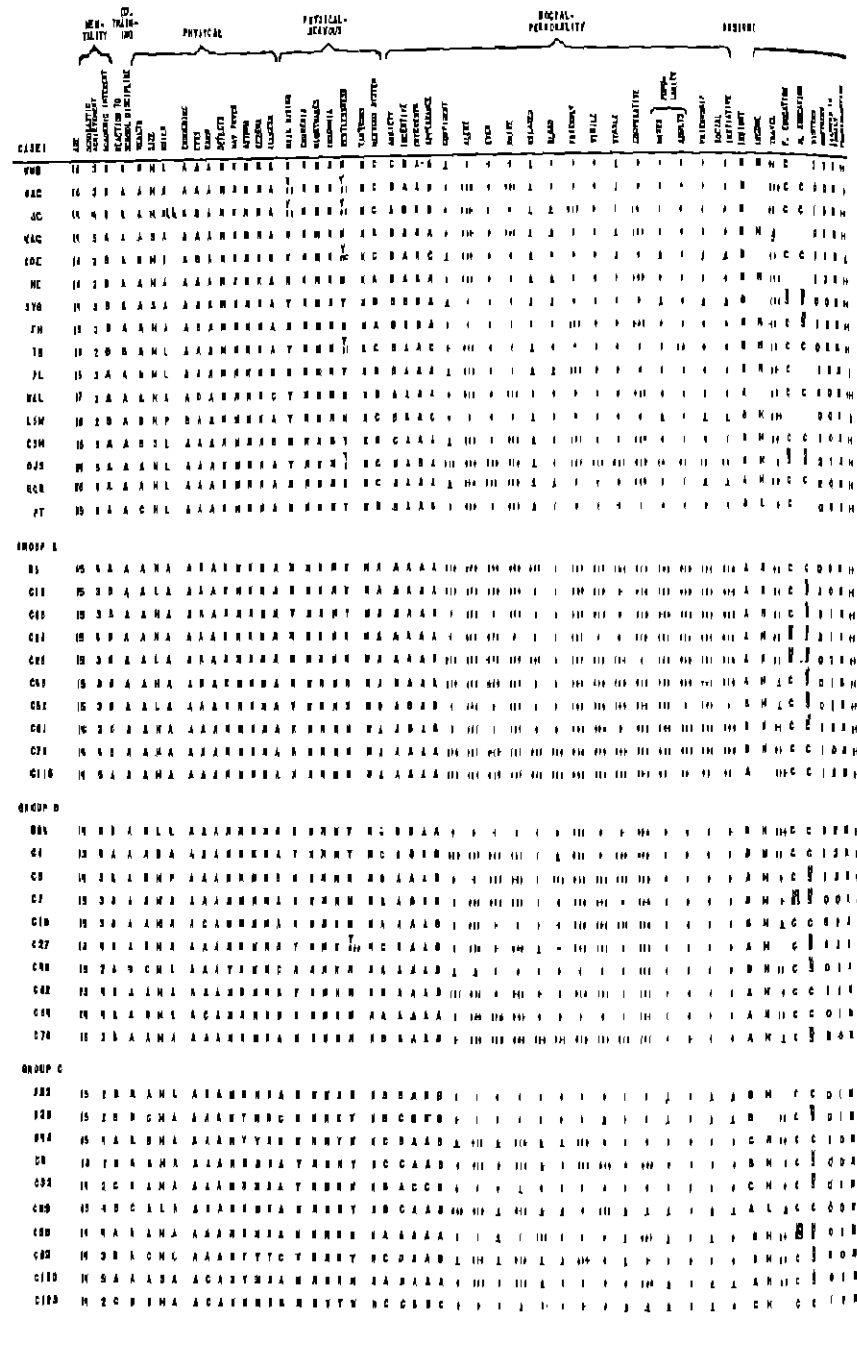
> . . . any individual can be a real (even though minute) force which creates maladjustment in others, e.g., by rejecting, hating, humiliating, or scorning others. Or else he can be a real (even though minute) psychotherapeutic force, e.g., by respecting others and being kind, affectionate, loving, and accepting.

This suggests how accurate measurements as to the habitual type of interaction patterns in different cultures may lead us to the inherent values in different social philosophies, may demonstrate mathematically the values of the principles of Scientific Humanism, and may help us to know more about

> . . . the limits within which men can be conditioned, and what patterns of social life seem to impose fewest strains

upon the individual (17, p. 5).

CHART 24. CASES - STUTTERERS; CONTROL GROUP A - WELL ADJUSTED; CONTROL



GROUP B - MEDIUM ADJUSTMENT; CONTROL GROUP C - POORLY ADJUSTED

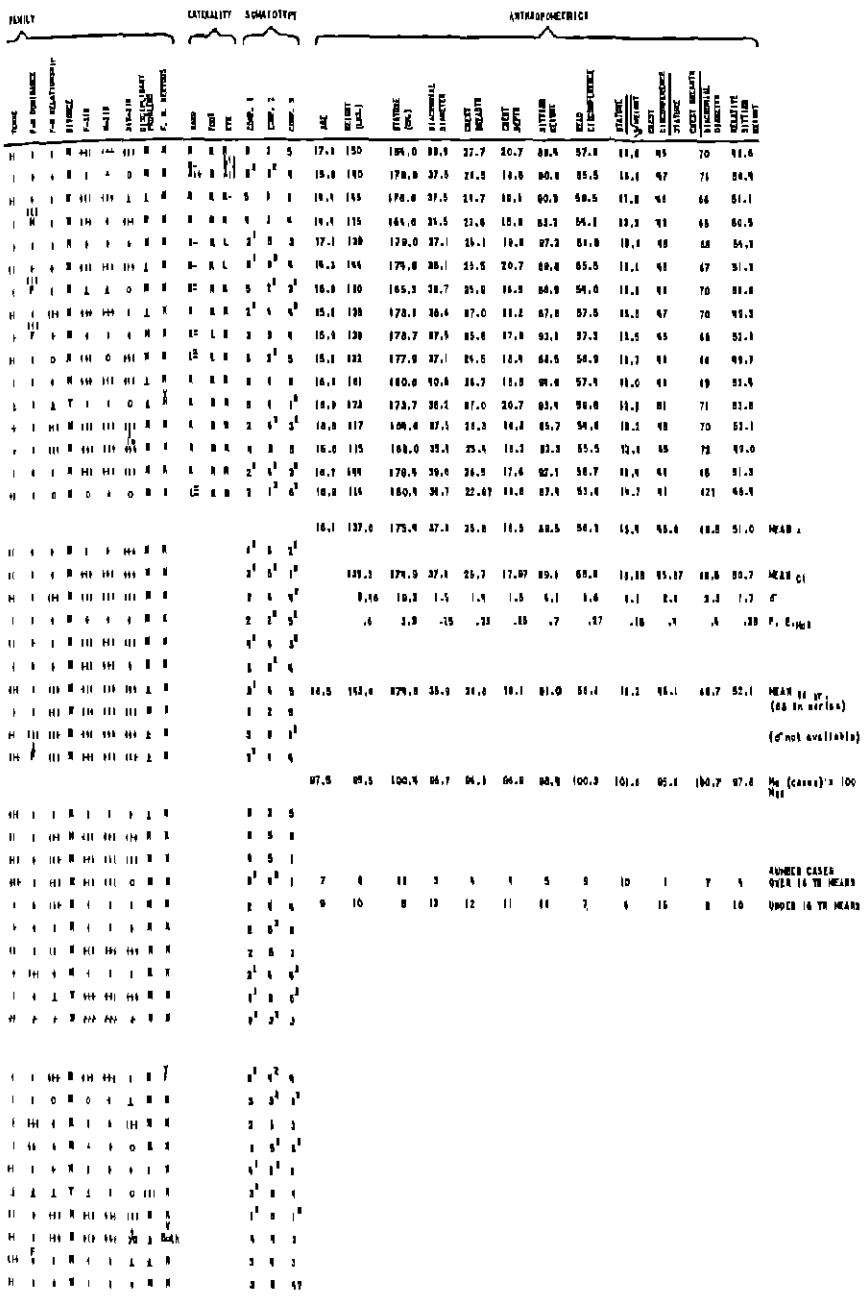


CHART 25. CASES - RESPONSES TO INTERVIEW QUESTIONS

	START (AGE)	REASON	OTHERS IN FAMILY	OTHER HANDICAPS FAMILY	PERIODICITY	WHEN WORST	WHEN LEAST	BOTHERSOME WORDS	BOTHERSOME LETTERS	PREVIOUS TREATMENT	SCHOOL HANDICAP	SCHOOL RECORD	PREPARATORY SCHOOL RECORD	WRITING	SPELLING	READING
WMB	12	N	N	BROTHER VERY POOR SPELLER	N	CONVERSATION	DRAMATICS	N	"T"	N	SLIGHT	GOOD	FAIR	GOOD	AV.	AV.
DAC	7	N	N	N	LESS DURING VACATIONS	RECITATION	-	N	N	TOLD TO TALK SLOWLY	SLIGHT	GOOD	GOOD	FAIR	GOOD	GOOD
JC	BEFORE 10 AT AN ACADEMY	IMITATION?	N	SISTER CAN'T SPELL AND IS LEFT HANDED	N	RECITATION	-	N	"WH"	TOLD TO TALK SLOWLY	SLIGHT	GOOD	GOOD	POOR	AV.	GOOD
WAC	7	AMBIDEXTROUS CHANGED TO RIGHT (?)	N	N BROTHER ALWAYS IN TROUBLE AT SCHOOL	WORST IN 4TH GRADE STRICT TEACHER, GOOD IN 7 & 8 GR. LESS IN VACATIONS	RECITATION AND CONVERSATION	SINGING	N	N	SPEECH CLINIC NO HELP TOLD "SINGSONG"	NO	GOOD	EXCELLENT	SLOW	GOOD	GOOD
CDE	10	LEFT HAITI AND FAMILY, CAME TO U.S.A. - HARD ADJUSTMENT	N	MOTHER POOR SPELLER	WORSE WHEN TIRED	RECITATION AND CONVERSATION	-	N	N	N	YES	GOOD	POOR	FAIR	POOR	GOOD
KE	8	N	N	N	N	READING ALOUD	DRAMATICS	N	"P"	6 WEEKS DR. FROESCHELS VIENNA VERY LITTLE HELP	SLIGHT	GOOD	FAIR	GOOD	AV.	AV.
STG	10 AFTER 2 YRS IN PREPARATORY SCHOOL	ENGLISH HARD, WORRIED ABOUT IT	N	FATHER IS LEFT HANDED	BEST THIS YEAR	PUBLIC SPEAKING	-	N	"S" & "T"	N	NOT NOW USED TO BE	AV.	FAIR	GOOD	AV.	SLOW
FH	6	N	N	BROTHER USED TO LISP, WRITES LEFT HANDED	N	ARGUMENTS	DRAMATICS	N	N	TWO LESSONS PER WK. ONE YEAR TOLD TO TALK SLOWLY - HELPED	VERY SLIGHT	FAIR	FAIR	FAIR TO POOR	AV.	AV.
TM	11 WHEN SCHOOL WAS CHANGED	N NEW SCHOOL?	RARELY MOTHER	N	N	RECITATION	SHOUTING - BETTER IF LESSONS WELL PREPARED	BROTHER	"B" "G" "J"	BREATHING EXERCISES 1 YR AGO	YES	-	-	FAIR TO POOR	AV.	AV.
PL	7	N	N	N	STOPPED FOR FEW YRS THEN RECOCCURED NO REASON KNOWN	RECITATIONS AND STRANGERS	SINGING	N	N	N	VERY SLIGHT	GOOD	FAIR	AV.	AV.	AV.
WRL	7	N	- COUSIN	N	WORST IN GR. 4 "NASTY" TEACHER	N	DRAMATICS	N	"P"	ELOCUTION AND SPEAKING OVER TWO YRS NO HELP	SLIGHT	GOOD	GOOD	FAIR	AV.	SLOW
LSM	7	BORN IN FRANCE, MOTHER FORBADE HIS SPEAKING FRENCH	MOTHER	FATHER AMBIDEXTROUS	N	RECITATION	DRAMATICS	N	N	N	YES	GOOD	-	VERY POOR	AV.	AV.
CSM	6	IN GERMANY - SABBATIC YEAR - FORCED TO GO TO SCHOOL BY POLICE - BADLY FRIGHTENED	N	FATHER AND SISTER VERY POOR WRITERS	N	RECITATION	SINGING	N	"P" "WH"	SOME HELP IN SCHOOLS	SLIGHT	GOOD	FAIR	FAIR	GOOD	GOOD
DJS	6-7 FIRST GRADE	KINDERGARTEN TEACHER FORCED USE RIGHT HAND?	N	BROTHER LEFT, SISTER AMBIDEXTROUS	YES	WHEN EXCITED	DRAMATICS SINGING	N	"S" "W"	N	NO	FAIR	EXCELLENT	POOR	AV.	AV.
GCS	8	WHEN 7, THREATENED BY CAMP COUNSELLOR	N	N	BETTER LAST 3 YRS.	N	-	N	N	N	NO	EXCELLENT	EXCELLENT	FAIR	GOOD	GOOD
PT	5	FRIGHTENED BY MAID	N	N	LESS DURING VACATION	RECITATION AND ON CONVERSATION	-	N	N	N	YES	EXCELLENT	GOOD	-	GOOD	GOOD

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The insights and suggestions of these people, as well as others, have helped the writer to the present stage of approach to the problem; however, for the interpretation and emphasis in the present paper the writer wishes to accept full responsibility for error and for misinterpretation or possible minimizing of certain important areas of the problem with which the writer is less familiar. It is hoped that the present data

are presented in such a way that others may be inclined to make their own interpretation of and add to the data whenever possible so that by cooperation and cross-fertilization of ideas a balanced interpretation may be the end result.

CHILDREN'S EMOTIONAL RESPONSES TO HEALTH EXAMINATIONS[1]

MARY M. SHIRLEY
and
LILLIAN POYNTZ

Adequate health care for infants and young children involves the application of techniques that often are emotionally upsetting both to the child and to his mother. Such upsets prove handicapping to the doctor and nurse that are giving the medical care. For some children repetition of the medical examination tends to reduce its emotion provoking connotation; for others it enhances it. Despite such wide individual differences, it is important to ascertain whether any age and sex trends exist in emotional responses to health care. Specifically we may inquire at what ages children are most likely to be upset by medical examinations? How do they progress in emotional control with age? How do they express their upsets at different ages? In what way do boys and girls differ in the frequency and type of emotional responses?

Source of the observations: The material comes from observation of children's emotional responses to a series of examinations made at six month intervals on approximately 250 children enrolled in a growth study.[2] The children have been subjected to a fairly consistent program of physical examinations, anthropometric measurements and orthopedic ratings, x-rays and still photographs, dental examination, and psychological observations from birth onward. From the beginning the various examiners took notice of the child's emotional reactions and bent their efforts toward preventing upsets. Nevertheless many children found the techniques to which they were subjected disquieting. Reports on each child's behavior during his examination were obtained from the various examiners at the end of the day at the Center.

This paper is based upon analysis of 572 records made on 184 children, 92 boys and 92 girls. Distribution of the records by age levels is given in Table 1.

[1] *Based on data collected at the Center for Research in Child Health and Development, Harvard School of Public Health, Harold C. Stuart, Director. The study was financed by a grant from the General Education Board.*

[2] *The general conditions of this study have been described by Harold C. Stuart and Staff (see Reference 9).*

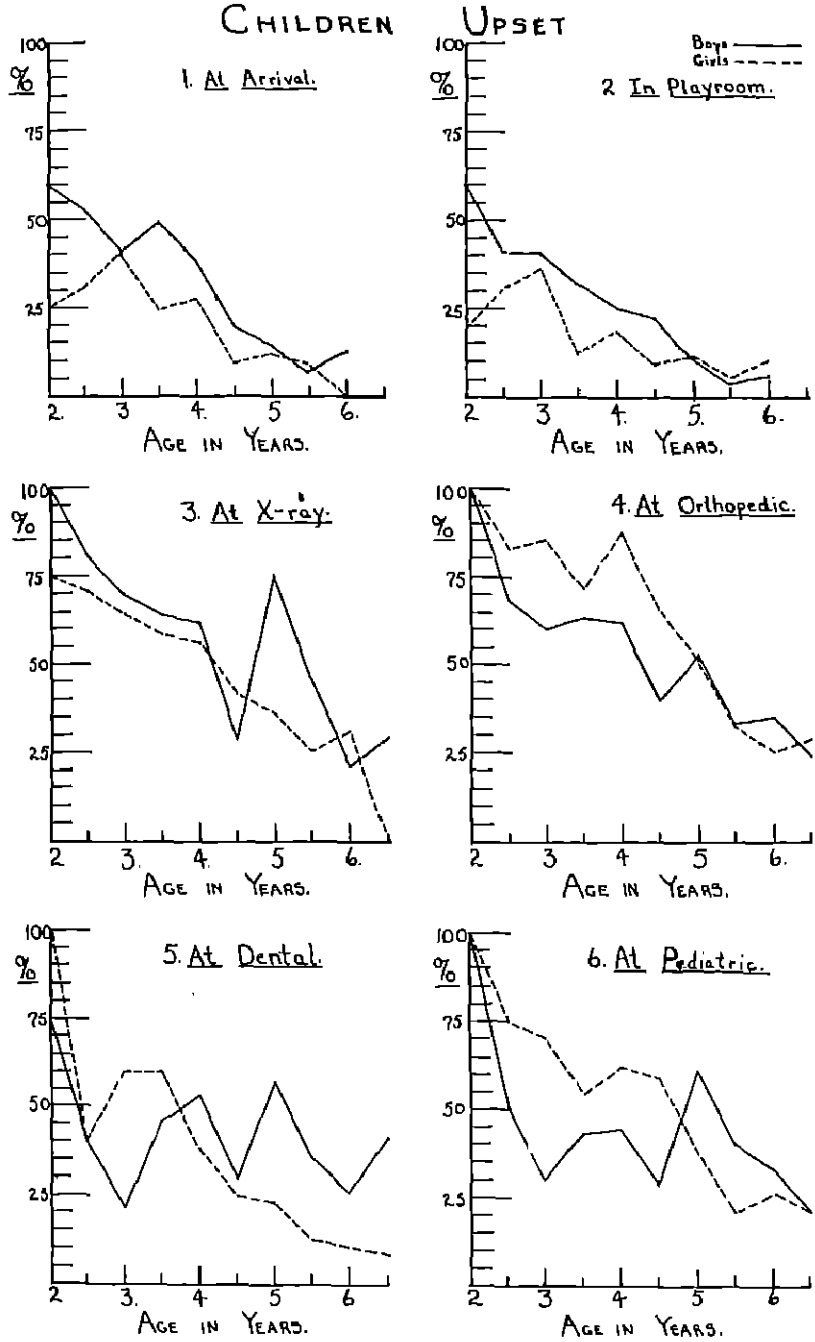
TABLE 1. AGE AND SEX DISTRIBUTION

Age in Years	Boys	Girls	Total
2	10	10	20
2 1/2	19	22	41
3	27	30	57
3 1/2	27	31	58
4	31	28	59
4 1/2	42	31	73
5	35	36	71
5 1/2	38	38	76
6	29	32	61
6 1/2	16	19	35
7	7	14	21
Total	281	291	572

Age Trends in Childrens' Upsets at Examinations

Under the conditions described, behavioral indications of upsets did occur. At all ages up to 6 1/2 years, beyond which age the records have not been tabulated, some children cried, some protested verbally, some actively resisted, and some tensed and tried to withdraw; some, of course, expressed emotion in all those ways at the same examination. All such behavior was considered to indicate some degree of emotional upset on the child's part, and a child manifesting any of these responses at any time during an examination, whether he continued it throughout or not, was classified as being upset.

Developmental trends in the frequency of upsets at different types of examinations are shown in Figures 1, 2, 3, 4, 5, and 6. It is unfortunate that no records were available at ages younger than two years. It is the impression of the examiners, however, that 18 months was the age at which the children were most difficult to examine. During the early months, 3, 6, and 9 months, the babies often cried and squirmed but their efforts at resistance were not very effective. Even at 12 months they were able to do little more than roll and slash with their arms. At 18 months, however, all were able to run about, and it was then that lying on a table was a most frustrating experience, to be resisted with every ounce of fight the baby could muster. From two years on the number of emotional upsets declined with age. The frequency of emotional upsets at examinations was higher than that at arrival or during the play period (8). Comparison with figures on the proportion of "easily upset"


CHILDREN UPSET
Boys
Girls
1. At Arrival.
2 In Playroom.
3. At X-ray.
4. At Orthopedic.
5. At Dental.
6. At Pediatric.
%
100
75
50
25
2
3
4
5
6
AGE IN YEARS.

children that are found in Federal Nursery School groups indicates that the proportion of children upset by examinations at the Center was no greater than that occasioned by preschool education programs (3).

The different types of examinations differed somewhat from one another in the percentage of upsets they provoked. The dental examination, which occurred when the child was fully dressed and which lasted only fifteen minutes, appeared to be the least upsetting. Differences among the other examinations were not striking.

Sex differences in the proportion of children upset were of about the same magnitude as for upsets at arrival and in the playroom, but they were not always in the same direction. Whereas boys quite consistently were more upset than girls upon arrival and during play periods and at meals, girls had a higher proportion of upsets during examinations at almost every age level. Although this sex difference is slight and not too well established by the evidence on the rather limited number of cases that were tabulated, still there are logical interpretations of it that are worth while considering. Whereas boys are less mature physically and emotionally than girls, age for age, and hence feel a greater insecurity in the absence of the mother during the routine features of the day, they have from earliest childhood a wider range of interests and a higher degree of curiosity, a trait that gives them more intellectual satisfaction in examining the apparatus and watching the techniques of the examining situation (6). Furthermore, the approved culture pattern inculcates into boys earlier and more systematically than into girls that crying in the face of fear or danger is a sign of weakness. If a boy cries when hurt he is a "sissy"; if a girl cries, it is her prerogative and privilege because of her feminity. Schooling in modesty and prudish standards of what is "nice" and "not nice" are less firmly imposed on boys; hence boys have less conflict over the exposure of their bodies to the view and comments of adults. Both these cultural impacts would tend to make boys cry less than girls at examinations; but neither their higher curiosity nor their greater warnings against the unmanliness of cowardice makes up for their greater physiological immaturity and its accompanying need for maternal care; hence they do not tend to inhibit boys from crying at parting from their mothers more frequently than girls do.

Ways of Expressing Upsets and Ways of Handling Them

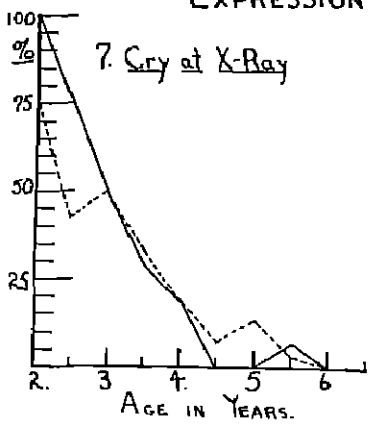
As in other studies of emotional expression in young chil-

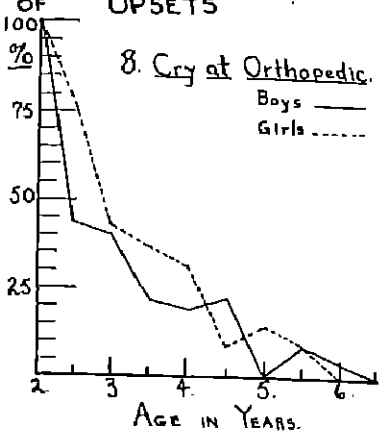
dren (1, 2, 4), so it was found in this that both vocal and muscular expression of emotion progressed from the non-specific and non-adaptive to the highly specific and well-adaptive response - from screaming and slashing and kicking in random fashion in infancy to specific acts of avoidance, protection, or withdrawal and to well-worded protests. The height of specificity both in motor and verbal forms of resistance seemed to occur in the late preschool years; thereafter there was a gradual return to the generalized muscle tension and to the non-adaptive and all but involuntary outcry "Ouch!" (7). This change from highly specific and adaptive resistance to non-specific and non-adaptive was not so much a reversion to an infantile level of behavior as a progress toward the adult-like divorce of cortical and thalamic processes, toward intellectual recognition that no real danger was involved, and toward the acceptance of the adult code of spartan acceptance of minor discomfort that our culture pattern imposes upon children early and often.

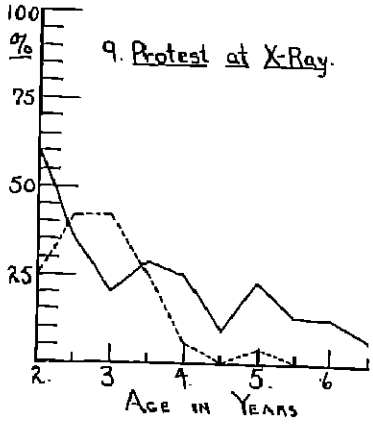
Some evidence of the timing of this developmental trend from non-adaptive to adaptive and back to non-adaptive response is to be seen in the six charts, Figures 7, 8, 9, 10, 11, and 12. Charts for two different types of examinations, the x-ray and orthopedic routines, and presented side by side to show how consistently a given type of behavior was manifested even though the types of examinations differed. The similarity of the curves for the different examinations offer convincing evidence as to the reliability of the material. Crying, (Figures 7, 8) the least adaptive type of vocal response, was almost universal for both boys and girls of this study up to two years; it had almost ceased to occur at 4 1/2 years. Making a verbal protest was a common response at all ages, (Figures 9, 10) and continued to be used in one form or another even at 8 years. Specific protests, however, seldom appeared before three years; the earlier protests were merely calls for Mama or Daddy (7). Non-specific fighting and jerking away were common in babyhood, but tensing in anticipation and resistance that was directed toward the examiner or the situation gradually increased from 2 to 4 or 5 years, and then again declined (Figures 11, 12). In using specific verbal protests and in the development of tension and resistance girls appeared to be about six months ahead of boys, a fact that is compatible with girls' lead over boys in all aspects of maturation up to puberty.

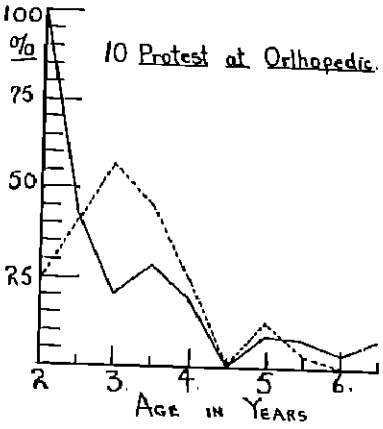
Emotional responses to health examinations not only show developmental trends that indicate the influence of maturational processes in self control, but they also reflect the influence of cultural standards on children's attainment of emotional fortitude.

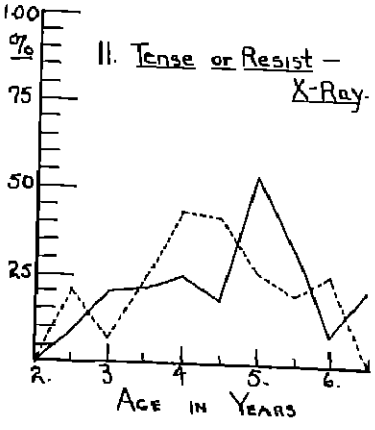
Expression of Upsets

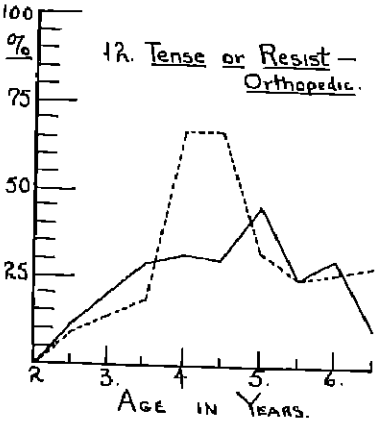












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MUSCULAR ACTIVITY AN AID IN CONCEPT FORMATION

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It is the purpose of this study to present a summary of an investigation concerning the influence of muscular activity upon the formation of concepts.

Historical Survey

George Kerchensteiner collected several thousand drawings from children of various ages and from a careful study of these he drew the conclusion that the development of drawings progressed as follows:

1. A meaningless scribble.
2. A scribble which the child happened to call a certain object.
3. An unrecognizable design which became symbolized as an object.
4. A mixed scribble and schema which has partly a resemblance.
5. A pattern having parts of a man but not a formalized schema.
6. A schema having some of the essentials of a man-head.
7. A formalized schema having major parts of the man.
8. Schema with limbs showing through the clothing.
9. Complete representation, profile.
10. Portrayal in three dimensions (5).

Clark, in his studies of the apple with the hat-pin, found that children of 6 years and under demanded that the total part of the pin show all the way through the apple as the pin did go through it; it was not two pieces of pin sticking into the apple but a whole pin going through the apple. Above 9 years and even beginning at 8 the children were more given to realistic representation (2). Rouma found the same obstinacy on the part of this younger group to portray what they knew to be there; he says that when he would stop them and ask them to look at the object they seemed to be annoyed and would only give it the required observation or glance and then continue drawing the

[1]*The author wishes to acknowledge her appreciation to Mary McFarlane for her aid.*

pin all the way through the apple in that study (11) and in drawing the box in the other study (12). Kerschensteiner (5), Luquet (6) and Eng (3) all bring out the fact that the child will draw the legs of the man and then put on the pants, coat or dress and, if drawing a house, will show the objects in the house - "For there is a table" - "There are chairs." O'Shea (9), Passy (10) and others tried posing in different positions and found the above facts to be true. Thus it is that at 6 years of age and under the writers received "knowledge" pictures, while over 8 years they gained more and more the realistic drawings. Bühler maintains that it is this knowledge which makes the child draw: two arms, two legs but only one nose (1).

It has been found by Kerschensteiner (5), Sully (13), O'Shea (9) and Maitland (8) that children over 9 years draw the human being more often in profile than front view; likewise that children under 9 tend to draw the front view. It is the younger age children 6 and under who draw what they know. When a child of this younger age makes a profile drawing he puts in the nose and mouth then places two eyes on that side of the head. This factor is brought out strongly by Luquet (6) and Eng (3) in their studies of individual cases in which they heard the child say: "No she has two eyes, she has two ears I will put them both here."

Thus, according to Clark (2) and Rouma (11), children under 6 years pay no attention to the object which is placed before them; they are primarily interested in drawing it as they know it to be. In spite of the object posing before them, O'Shea and Passy found that children drew it as they knew it to be; in other words, the sight of the object did not influence their drawing. This writer has on occasions called the attention of the children to a drawing made on the board then asked them to draw it, only to receive the same discouraging results as those mentioned by the above authors. Last year the group was asked to draw the man part by part as it was drawn on the board before them. The drawing was then erased, the children given a second sheet of paper and told to draw the same man. This brought results which prompted the undertaking of this study with a new group of children.

The Procedure

The drawings studied the first part of this investigation were made by 24 American children. One child moved to Florida to be near his father in camp, another was ill, otherwise the group remained the same for the second part. They were attending kindergarten and nursery at Southern Illinois

Normal University and their ages ranged from 51 months to 72 months.

The first set of the first group of drawings was made on the Tuesday following New Year's day. Each day for ten successive school days the children drew the two drawings. There followed then a period of six weeks in which the subject was completely dropped, no drawings were called for and no instructions given, then drawings were again made for five successive school days.

Each child was provided with a large pencil and an unlined paper size 9x9 inches, their initials and the date having been placed in the upper right hand corner. They were so seated that they would not see each other's drawings and would not be tempted to talk. They were told: "Today we are going to draw a picture of a man. You may draw the picture of your daddy. Draw the very best picture of him that you can." They were given all the time they desired, which ran from five to ten minutes.

After this drawing was completed the papers were turned over and the pencils were placed on the sheet. The children then stood and after listening carefully followed the teacher in the suggested activity.

The first day the teacher said: "This is my head, I nod it," (every one repeated the words then nodded). "Now you may draw another picture of a man. Think about each part and put it in the picture."

The same procedure was followed the second day, to "This is my head I nod it," was added "This is my stomach I rub it." Repeating the sentence they nodded their heads and rubbed their stomachs in a circular fashion. Table 1 gives the sentences and their accompanying activities. The interest on the part of the children was maintained through the fun in doing these accompanying activities.

Each day's drawings were clipped together. At the end of the ten days they were taken out to score. Inasmuch as the problem was that of investigating the influence of muscular activity on the formation of concepts, the artistic qualities of the pictures were entirely disregarded. This study is primarily interested in the drawing of those additional parts of the body listed in Table 1. The scale best suited in determining this was developed by Goodenough (4, pp. 14-45 and 85-160). It is understood that this investigation does not concern itself with the development of intelligence as measured by the drawings but the growth of the concept as shown by the increase in the items added to the drawing.

TABLE 1

THE STATEMENT AND ITS ACCOMPANYING ACTIVITY WHICH EACH DAY PRECEDED THE SECOND DRAWING

Day	Statement	Activity
1.	This is my head, I nod it.	Nod head.
2.	This is my stomach, I rub it.	Rub stomach.
3.	These are our arms, we swing them.	Swing arms.
4.	These are our legs, we jump.	Jump.
5.	These are out fingers, we wiggle them.	Wiggle fingers.
6.	These are our toes, we wiggle them.	Wiggle toes.
7.	This is my hair, I pull it.	Pull hair.
8.	These are our eyes, we blink them.	Blink eyes.
9.	This is my nose, I wiggle it.	Wiggle nose.
10.	This is my mouth, I open it.	Open and close mouth.
	After Six Weeks	
11.	These are our ears, we wiggle them.	Wiggle ears.
12.	These are our eye brows, we raise them.	Raise eye brows.
13.	This is my neck, I turn it.	Turn neck.
14.	These are my shoulders, I shrug them.	Shrug shoulders.
15.	This is my tongue, I stick it out.	Stick out tongue.

There are 51 points in the Goodenough Scale; aside from points for each item as head, trunk, arm, legs etc., there are additional points for "5a. Attachment of arms and legs." "9e. Costume complete without incongruities." "16a. Eye in detail. Brow, lashes, or both shown." If the child portrayed simply those items listed in Table 1 he would, according to the Goodenough Scale, receive a raw score of 15. Should he draw these in detail or have them in proportion, there would be additional points and therefore a higher score.

The drawings were scored by two individuals. Where there appeared a difference in score a re-check was made. The scores were then tabulated on a large work sheet.

The Findings

The findings were divided into two parts, the one dealing with the statistical findings, and the other a more detailed study

TABLE 2

STUDY OF SCORES ON THE DRAWING OF A MAN

Pupil	C.A.	First	Last	Median	Highest	Increase
J.M.	72	13	14	14	16	3
S.S.	70	10	11	11	12	2
S.T.	69	10	12	11	12	2
L.B.	68	8	11	12	14	6
D.L.	67	9	11	11	12	3
L.C.	66	3	7	8	9	6
L.F.	65	8	11	9	13	5
M.R.	65	8	10	10	11	3
P.W.	65	11	10	9	14	3
J.O.	64	4	10	8	11	7
F.H.	64	11	13	12	14	3
M.H.	62	11	12	11	13	2
S.H.	62	5	8	7	9	4
V.L.	62	7	13	11	14	7
F.S.	61	6	10	9	11	5
A.L.	59	7	10	7	10	3
M.G.	58	1	6	6	10	9
M.S.	54	2	6	5	6	4
W.P.	54	3	8	5	8	5
J.C.	52	2	6	6	12	10
T.W.	52	0	1	4	7	7
W.M.	51	4	3	4	7	3
C.T.	51	4	5	5	7	3
S.T.	51	2	3	2	5	3

Col. 1, initials of the various pupils. Col. 2, chronological age expressed in months. Col. 3, the scores on the first drawing of the man. Col. 4, the scores on the last drawing taken up on the tenth day. Col. 5, the median score. Col. 6, the highest score made by each child. Col. 7, the difference between the highest score and that made on the first drawing.

of a few of the individual drawings.

Of the 24 children taking part in this study 19 had all 20 drawings and the other 5 had enough to warrant their being included. Of the 24 half did not at any time go below the score on their first drawing. Only 9 of the remaining 12 dropped from one to four times below the original score. Of these times the drawings showed that the children had become so interested in portraying some idea that they had forgotten the drawing of

the man as a whole.

From the work sheet containing the scores on the drawings in the first part, there are to be found in Table 2, Column 1, initials; Column 2, chronological age expressed in months; Column 3, scores on the first drawings; Column 4, scores on the last drawing; Column 5, the median score; Column 6, the highest score; and Column 7, the difference between the highest and the first scores which in each instance was an increase. It will be noted that the children are listed according to their chronological age: 51 to 72 months. The scores on the first drawings, running from zero to 13, show some correlation to the chronological age, yet one of the youngest received a score greater than that of the sixth from the oldest. There is a difference in age of 20 months while the difference in scores is 13 points. Yet these 13 points represent the portrayal of the various parts of the man (head, eyes, eye brow, nose, mouth, hair, neck, trunk, arms, legs, fingers, feet and pants). That is, J.M.'s first drawing included most of the items listed in Table 1, while T.W.'s drawing was a meaningless scribble. The median score on these first drawings is 6, which shows that the majority of the drawings were incomplete and quite immature.

The fourth column in Table 2 contains the scores on the last drawing taken up on the tenth day - the twentieth drawing. These scores range from one to 14, which is only one point above the scores for the first drawing. From this it would at first glance appear that little had been gained, yet the median of these scores was raised from 6 to 10 points.

It was regrettable that the study began on a Tuesday and ended on a Monday as each Monday's scores tended to be lower than the preceding Friday's. For this reason the sixth column contains the highest scores. They range from 5 to 16 with a median of 11 or 5 above the median on the first scores.

In order to gain a relative idea of the progress of each child the median for the 20 drawings was determined and these are recorded in the fifth column. The median of these medians falls between 8 and 9, showing a slow but steady progress.

The difference between the scores made on the highest and the first is to be found in Column 7. In every case there is an increase; this runs from 2 to 10 with an average of 4 1/2.

Turning to the second set of drawings (Table 3) it will be noted that the scores on the first set of drawings range from 3 to 14. Comparing these scores with the scores made on the last drawing on the first set, it will be found that half the scores are one to 5 points lower than the scores made on the last drawing in the first set and that only 5 of the 22 raised them from one to 3 points. Furthermore, the median of these draw-

TABLE 3

STUDY OF THE SCORES ON THE DRAWING OF THE MAN
Second Set

Pupil	C.A.	First	Last	Median	Increase	Increase
J.M.	72	14	16	16	2	3
S.T.	69	11	17	13	6	3
L.B.	68	11	16	16	5	8
D.L.	67	10	13	12	3	4
L.C.	66	8	12	11	4	9
L.F.	65	11	13	13	2	5
M.R.	65	11	15	12	4	7
P.W.	65	9	12	11	3	1
J.O.	64	11	13	12	2	9
F.H.	64	12	13	12	1	2
M.H.	62	7	12	11	5	1
S.H.	62	8	10	9	2	5
V.L.	62	12	14	13	2	7
F.S.	61	8	12	10	2	6
A.L.	59	9	10	9	1	3
M.S.	54	5	7	5	2	5
W.P.	54	4	7	6	3	4
J.C.	52	3	11	9	8	9
T.W.	52	3	5	7	2	5
W.M.	51	3	9	6	6	4
C.T.	51	5	7	6	2	3
S.T.	51	6	9	6	3	7

Col. 1, initials of the various pupils. Col. 2, chronological age expressed in months. Col. 3, scores on the first drawing in this set. Col. 4, scores on the last drawing - the thirtieth. Col. 5, the median. Col. 6, the difference between the last scores and the first on the drawings of the second set. Col. 7, the difference between the scores on the last drawing of the second set and the first of the first set.

ings' scores has dropped back to the median of the medians in the first set. Comparing the scores on the first drawings of both sets it will be noted that all are higher but 3. While the median shows a loss of 3 points over the last drawing, they show a gain of 3 points over the median of the scores on the first drawings.

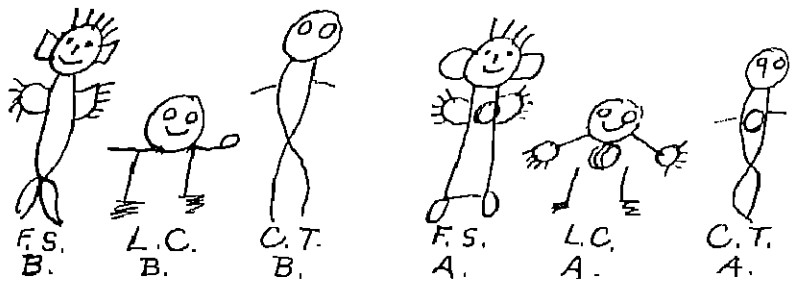

Figure 1. "This is my stomach, I will rub it."

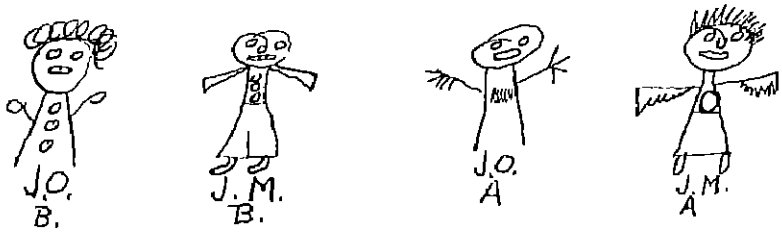

Figure 2. "These are my fingers, I will wiggle them."

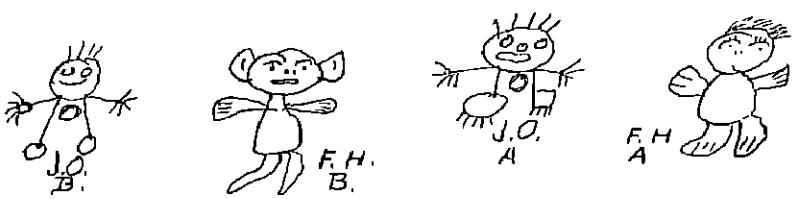

Figure 3. "These are my toes, I will wiggle them."

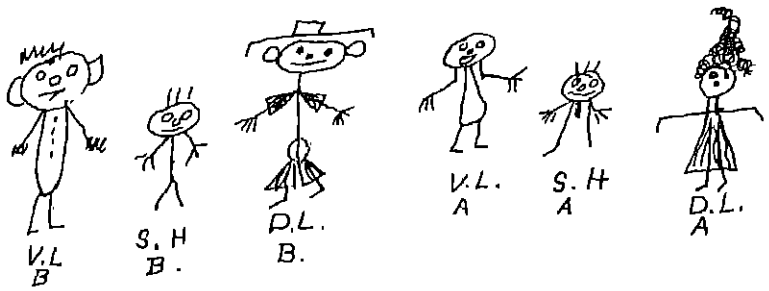

Figure 4. "This is my neck, I turn it."

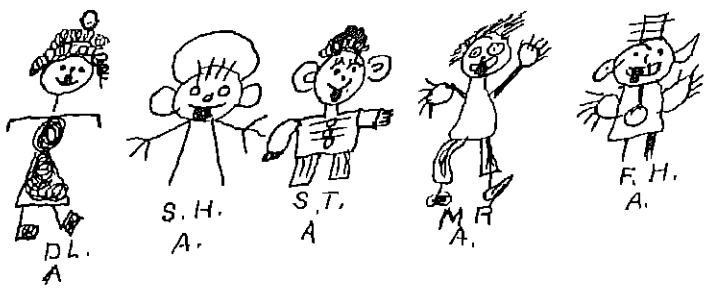

Figure 5. "This is my tongue, I stick it out."

Inasmuch as this second study ran for only five school days from Monday through Friday, the last of the 10 drawings were made in the same week as the first. Here the scores range from 5 to 17 with a median of 12 - twice that made on the first drawings of the first part. It is also one higher than that made on the highest in the first study.

The median of the individual drawings is presented in Column 5, Table 3, and it is to be noted that they fall nearer the score on the last drawing than the score on the first drawing. Studying the medians in Table 4 it is noted that the group progressed from 6 to 12; that when they are not drawing for a period of time they fall back; yet upon renewing the study they quickly regain the loss and continue to progress.

Column 7 of Table 3 contains the difference betwe scores made on the first drawing and the last drawing

second part. In each case there is an increase which ranges from one to 8 with an average of 3.2. The average increase for the first two weeks was 4.5, for the third week it was 3.2, and for the combined three weeks it was 5.

TABLE 4

STUDY OF THE MEDIANS

Study	First	Median	Last
I	6	8	11
II	8	11	12

It is of interest to note the direct influence of muscular activity in the study of the individual drawings. A few Before (B) and After (A) drawings will illustrate the point. Before we had "This is my stomach, I will rub it," 59 per cent of the drawings contained the trunk - stomach as the children preferred to call it. After this activity there were 89 per cent (see Figure 1) which contained the stomach.

Before they said, "These are my fingers, I will wiggle them," there were 29 per cent who portrayed fingers; after this there were 70 per cent (see Figure 2).

Before they said, "These are my toes, I will wiggle them," 37 per cent contained feet or shoes. After this activity there were only 2 per cent who indicated any toes (see Figure 3), but the number who indicated feet or shoes rose to 78 per cent. The question arises, did the fact that they could not wiggle their toes well in their shoes merely draw their attention to the shoes?

Before they said, "This is my neck, I turn it," there were 5 per cent of the drawings which portrayed the neck. Following this activity there were 52 per cent which contained attempts as shown in Figure 4.

Although a few had portrayed teeth there were none who had drawn a tongue up to the last drawing. There were 21 present that day and they thoroughly enjoyed sticking out their tongues at each other. Even the rest of the man seemed to portray the happy attitude of the children (see Figure 5). In all there were 12 such drawings which showed the tongue stuck out of the mouth, either up or down.

Summary and Conclusion

Previous studies have shown that children 6 years and under draw "knowledge" rather than realistic pictures. The presence of objects tends to annoy them rather than inspire or suggest.

This study was undertaken with 24 American children between the ages of 51 and 72 months. For ten successive school days they drew two pictures. Having drawn the first they turned over the paper and after listening to the teacher say, "This is my head, I nod it," they repeated the words and nodded their heads. They then drew a second picture on the back of the first. Each day in "This is the house that Jack built," style there was suggested another part of the human body by its accompanying activity. At the end of the two weeks the matter was dropped, no drawing of the man was made, no reference to the study was given. After six weeks the study was then continued for five successive school days. The Good-enough Scale was used in scoring the drawings.

The scores were tabulated on a large work sheet from which the scores on the first, last, best, together with the medians and the amounts of increase have been taken for Tables 2 and 3. A study of these findings shows:

1. During the three weeks of the study every child made a positive increase from one to 10 points. The average for the first two weeks was 4.5, for the third it was 3.2, for the combined three weeks it was 6 points. The median rose from 6 on the first set to 12 on the 30th or last. The median of the medians shows that there was a gradual increase. It is of interest to note that the second median of the medians is nearer the median of the last set of scores than the first. This would indicate that the children were slowing down - their scores were nearing the total number of points to be gained on the items listed in Table 1.

2. During the 6 weeks between the first and second studies most of the children fell back as the scores on the first drawing of the second set dropped one to 5 points below those made on the last of the first study for half of the children. Only 5 of the 22 children raised their scores - one to 3 points. This would indicate that the increase made in the three weeks' study was something more than that which might occur through natural development. The fact

that the median of the scores on this first drawing of the second set is 3 points below the median of the scores on the last drawing of the first set shows that the children forgot some, but the 3 points above the median of the scores on the first drawing indicates that they retained some.

A study of the pictures drawn before attention was called to that part of the body by the appropriate activity and those drawn after show that there is a positive and direct influence upon those drawings which follow the exercise. The amount ranged from 2 per cent - in the case of the toes - to 47 per cent in the case of the neck.

It may be conlcuded from the above summary of findings that children, 61 to 72 months, learn faster through doing than seeing. In other words, teach this age through his muscles - "put it in through the muscles."

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CALCULATION OF NORMAL WEIGHT

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The normal or "ideal" weight for a given individual is a highly desirable measure. It gives to the physician an index of the state of nutrition and tissue balance (and therefore the health) of his patient. It would be very desirable to obtain this information accurately in a given individual instead of guessing it approximately.

The present method of gauging the normal weight of a given individual is by the use of Height-Age-Weight tables. These tables have many serious deficiencies.

1) The Height-Age-Weight tables are derived as statistical means from measurements taken of large groups of average (not "healthy" or "ideal") individuals and therefore set up a hypothetical so-called "average individual" to whom all individual types of persons must conform. Actually, only about 60 per cent of the population "fit" such tables to a reasonable degree.

2) The figures listed in such tables are, at best, meant to be only an approximation, not an absolute figure of fact. They are meant to serve as a standard of reference rather than as true figures to be used for a particular individual.

3) The tables take into account only a single linear dimension, height, while man is a three-dimensional object having also width and thickness.

4) Such omission fails to recognize the obvious fact that individuals (of the same age and height) differ markedly as to bodily habitus (endo-, meso-, and ectomorphs). Weight is determined by the body as a whole rather than by any single one of its dimensions.

5) Growth in width and thickness does not stop when growth in height is completed. It is this growth in circumference that characterizes maturity.

6) The present tables utilize age as a measure of the continued growth in circumference after height is stabilized. However, different types of individuals (slender, stocky) grow in circumference at different rates. Age per se does not differentiate this factor and is at best again only an approximation of circumferential growth during maturity. It would be more exact to measure such increases in width and thickness directly.

It would, therefore, be desirable to calculate the "normal" or best weight for a given individual upon some system which

utilizes direct measurements of the body. Such a system of calculation must take into consideration all the factors mentioned above and include a consideration of individuality in body build. It would be more logical than the present one based on average height, age and weight.

Method

The human body can be regarded as an irregular cylinder. This was later confirmed by the fact that body circumferences give a slightly better correlation with actual weight than do measurements of width and thickness. Further, the form of the body, at various levels, is ellipsoidal in cross-section.

$$\text{Since: } \frac{(\text{Mean Circumference})^2}{\pi \cdot k} = \text{Average cross-sectional area of body}$$

(k = Correction for irregularity of body)

The volume of the body can be expressed as:

$$\frac{(\text{Mean Circumference})^2}{\pi \cdot k} \times \text{Height} = \text{Volume of Body.}$$

$$\text{Volume of Body} \times \text{Specific Gravity} = \text{Weight of Body.}$$

$$\frac{(\text{Mean Circumference})^2}{K} \times \text{Height} \times \text{Specific Gravity} = \text{Weight of Body.}$$

Derivation of Mean Circumference. The average or mean circumference of a given individual is best represented by the circumference of the chest taken at Xiphoid (clinically, the lowest tip of the sternum) and at quiet (not forced) expiration. This at first was determined empirically by averaging all the circumferences taken at the various levels of the body after weighting them according to how much each area affects body weight.

It was also found that this particular level measures the mean circumference of the body in both the male and female so that the same formula can be constructed to apply to both sexes. (The index of gynandromorphy, maleness and femaleness, is measured by comparing shoulder and hip widths. The male has wide shoulders and narrow hips; the female narrow shoulders and wider hips. The circumference at Xiphoid represents the mean circumference in both sexes.)

There are other and more subjective reasons for finally deciding to use the Xiphoid level for the measurement of the

mean circumference of the body. This level permits a fairly good skeletal measurement and it is very desirable in anthropometry to use, whenever possible, skeletal points and measurements rather than soft-tissue measurements. The former are by far the more constant and reliable.

It must be remembered that in calculating weight we are, in reality, trying to estimate the amount of soft tissue which should ideally be draped over a particular skeletal framework. The measurement should therefore be as little influenced by fat pads and muscle as possible. The Xiphoid plane offers such a level. In even obese individuals, the fat forms layers or pads above this area (fat pads of shoulders and breasts) or below it (the "rubber tire" over the abdomen), but usually leaves this area relatively free.

The modesty factor in measuring the adult female is also eliminated by taking the measurement at Xiphoid instead of over the breasts or the hips.

The measurement is taken at quiet expiration for two reasons: First, the specific gravity of man is most constant and closest to unity at quiet expiration. Second, it is much more accurate to read an end-point than to estimate a mean. This is especially important here since errors in the measurement of chest circumference would be magnified by squaring in the formula.

Specific Gravity

Weight is markedly influenced by tissue composition. The major soft tissues that influence weight are: (a) muscle, (b) fat, and (c) loose subcutaneous connective tissue. Water is also an important constituent of the body tissues and cells. The relative proportions of these tissues vary with age and bodily habitus and determine the specific gravity.

The specific gravity of man changes somewhat with age and with bodily habitus. When taken at quiet expiration, the specific gravity is closest to being a true measure of his tissue composition or the quality of the soft tissue draped upon his skeletal framework.

Specific gravity is very close to 1.0 from 5 to 18 years of age. It is less than unity in the infant and young child since they have relatively more fat (low specific gravity) than muscle (high specific gravity). It rises gradually to 1.04 from 18 to 25 years and to 1.08 from 25 to 40 years because of the increase in muscle and bone mass over fat and loose connective tissue. After 40 it gradually declines again towards unity, as fat and connective tissue again increase while muscle and bone mass decrease. It is slightly higher in the muscular and slender type

of individual than in the stocky type of individual and lower in the female than in the male.

For all practical purposes it is not necessary to consider these slight variations in specific gravity except in cases of gross abnormalities in tissue composition (obesity, leanness, dehydration, nutritional and endocrine deficiencies, etc.). In these cases, a marked discrepancy will be found between observed and calculated weight. It then becomes useful to measure the volume of the body (as given before) and to calculate the specific gravity.

$$\frac{\text{Observed Weight}}{\text{Measured Volume}} = \text{Calculated Specific Gravity}$$

The calculated specific gravity is a useful tool in the analysis of tissue imbalance. The significance of specific gravity in the interpretation of tissue balance, nutrition and metabolism has been pointed out by Behnke, Feen and Welham (1) and Welham and Behnke (2).

Findings

The empirical formula was tested in a total of more than 1,000 healthy males and females ranging in age from birth to about 50 years. The predictive value of the formula was found to be excellent in the majority of cases. The coefficient of correlation between the calculated weight and the observed weight was 0.82. The final formula obtained was:

$$\frac{(\text{Chest Circumference})^2}{K} \times \text{Height} \times \text{Specific Gravity} = \text{Calculated Weight.}$$

$$(K = 4.0)$$
$$(\text{Sp. Gr.} = 1.0)$$

$$\frac{(\text{Chest Circumference})^2}{4.0} \times \text{Height} = \text{Calculated Weight.}$$

If the measurements are taken in centimeters, the result is in kilograms. If the measurements are made in inches, divide the whole by 27.69 (1 lb. H_2O at 68° F. = 27.69 cubic inches).

Technique of Measurement

Height. Stand subject (without shoes) against wall with

heels, buttocks and shoulders touching the wall. Tilt the head into the Frankfort Plane (eye-ear plane parallel to floor). Use a right angle to measure to top of head. Use same technique on infants in prone position.

Chest Circumference. Stand behind subject and encircle chest with tape at level of lower end of sternum (Xiphoid). Determine this point by palpation. Tape should be parallel to floor. Tell subject to inhale deeply and then exhale naturally (not forced). Pull tape fairly tight. (Pull tape very tightly in stout individuals to compensate for some subcutaneous fat and hold more loosely in slender persons whose bony structures are very evident.)

Take the lowest end-point reading. Repeat until two measurements coincide exactly. Remember that even a small error in this measurement will be squared in the formula and will give very fallacious results.

If more than three trials are necessary, your technique is faulty. Chest circumference at quiet expiration is not the same as uninflated chest measurement. In boys particularly, the masculine ego will cause them to instinctively inflate their chests and to give a false reading. The deep inhalation followed by expiration should eliminate this variable and gives a fairly reliable end-point.

The utility value of this method of calculating weight is high because of the simplicity of the measurements. The calipers used in some methods is replaced by the tape-measure. Any physician, nurse or teacher can quickly learn the method. The nomogram eliminates the necessity for calculations and is as easy to use as the average height-age-weight table.

Dysplasia. The trunk and head contribute 60 per cent and the limbs 40 per cent of the total weight. In dysplastic individuals where the extremities do not fit the trunk, the calculated weight must be adjusted. It should be remembered that chest circumference represents the mean circumference in the normally proportioned individual. Emphysematous chests will also invalidate the method. In fact, this is a good way to discover them.

A great deal of the accuracy of any method depends on the intelligence with which it is applied.

Calculation. Calculation is simplified by the use of the nomograms (Figures 1 and 2). Connect the proper points on the lines marked "height" and "chest circumference" with a straight edge and read the result on the middle line marked "Calculated Weight (or Volume)."

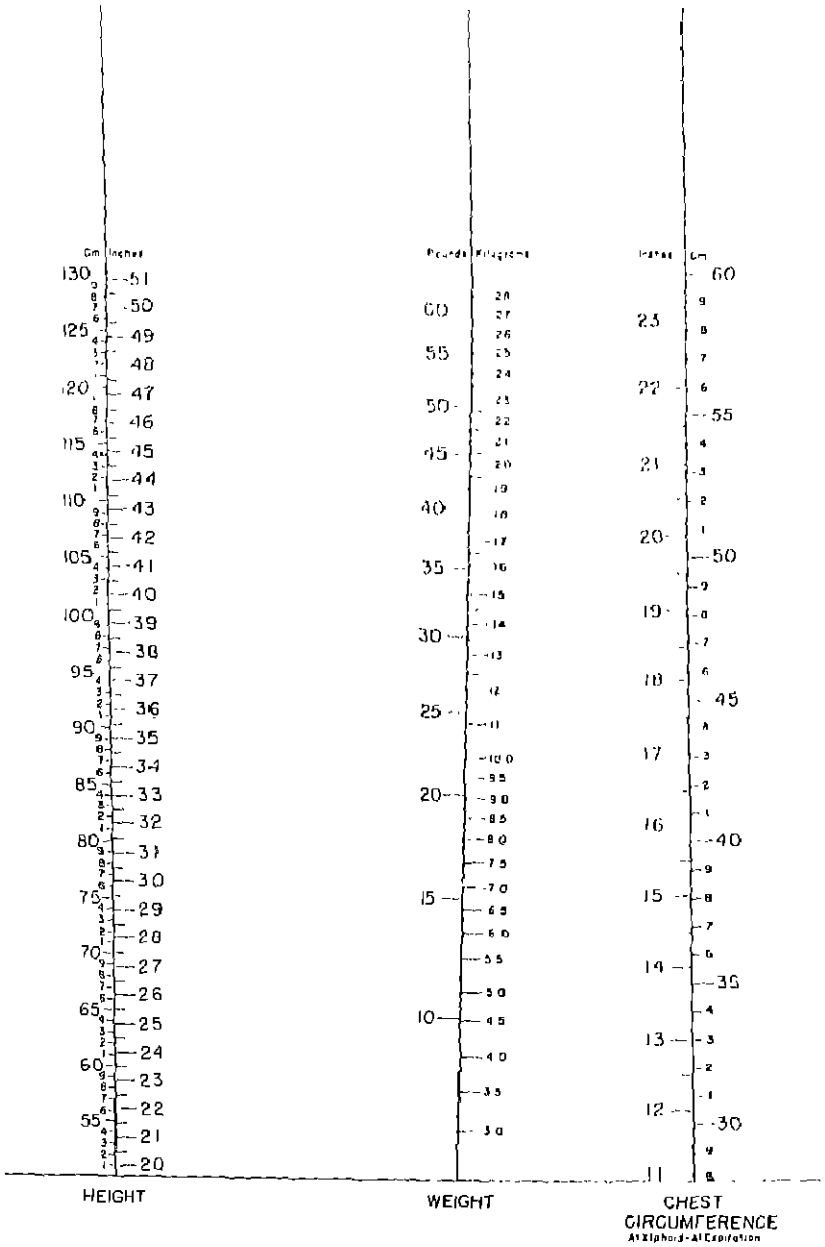

Figure 1. Nomogram for calculating "normal" weight of infants and children.

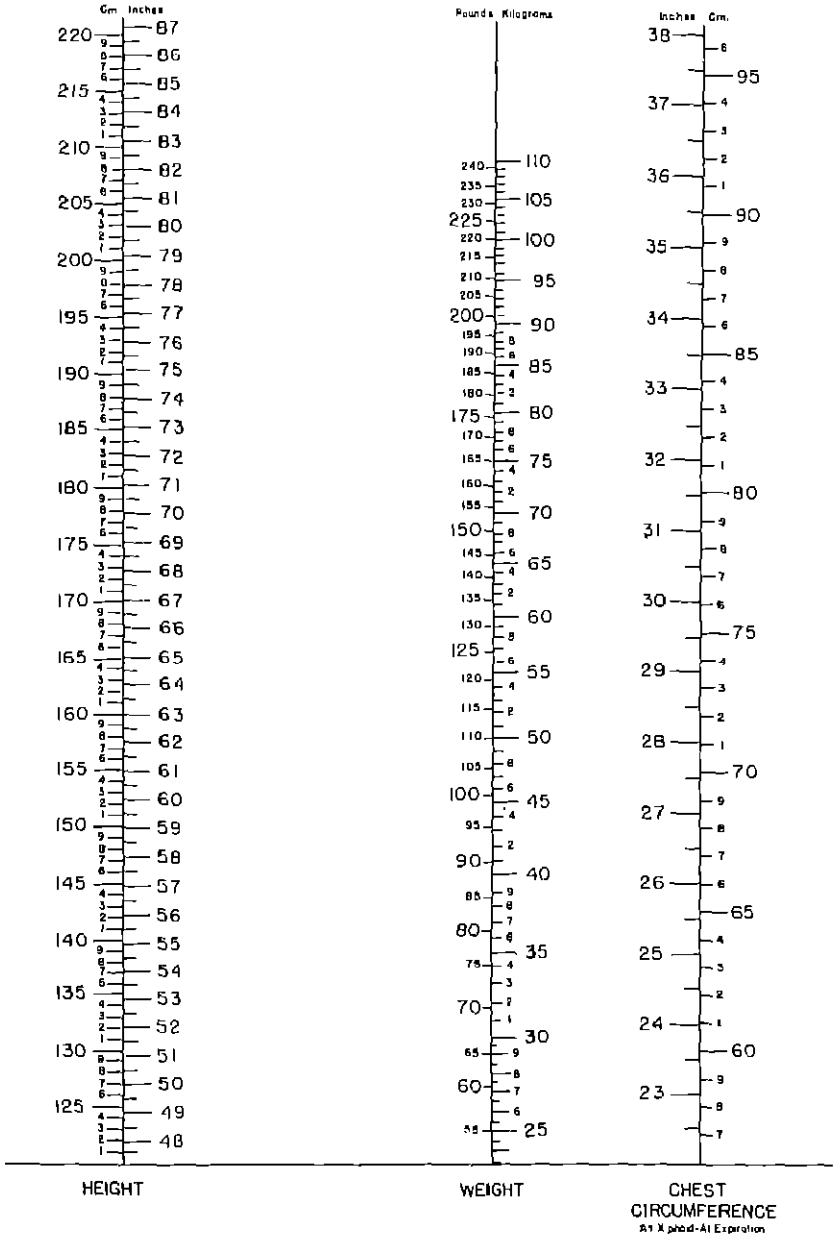

Figure 2. Nomogram for calculating "normal" weight of older children and adults.

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THE SOCIAL INTERESTS OF YOUNG ADOLESCENTS

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The fact that girls mature physiologically from one to two years ahead of boys is well-established. There appears to be corresponding maturation in social interests of a heterosexual character. Although this fact seems obvious to persons who have close contact with young adolescents, it appears to have received scant attention from research workers in child psychology.

In the course of examining pupils for admission to a junior high school in New York City, the writer obtained activity preference records for boys and girls between the ages of 10 and 14 which indicated the nature and extent of the differences between them in social interests. These pupils came from homes above average in socio-economic status and they rated about 123 I.Q. on the average.

Technique for Determining Activity Preferences

As a part of the school entrance examining procedures each pupil was given the Hildreth Personality and Interest Inventory: High School Form,[1] containing a list of activities from which the pupil was instructed to select and record on a separate sheet of paper the three or more items that represented his chief interests in spare time activities, and the three or more in which he was least interested. There were 45 items in the list, such as: Taking care of animals, going to movies, collecting things, entertaining company, taking pictures, having dates, working with electricity, building things, running a club, dancing, gardening, outdoor sports.

Pupils were instructed to be sure to include their chief interests in the recorded lists whether or not these were included in the printed list. Pupils were given the test individually or in small groups.

Results

Records were available for 87 boys and 105 girls in the age levels 10 to 14. Activity preferences were divided into two

[1] *G. M. Hildreth, Personality and interest inventory. High School form, New York, Bureau of Publications, Teachers College, Columbia University, 1936.*

categories: those which signified directly or indirectly social interests of a heterosexual nature, and those which did not. In the first category were included: Having "dates," social dancing, going to parties; in the second category, all other activities. The frequency of preferences for these two categories, according to the five age groups, is shown in Table 1. The first category is designated as "Social," and the second category as "other."

TABLE 1

ACTIVITY PREFERENCES OF YOUNG ADOLESCENTS

	Boys					Girls				
Age	Social		Other		Total	Social		Other		Total
	No.	%	No.	%		No.	%	No.	%	
10	0	0	3	100	3	0	0	3	100	3
11	1	4	25	96	26	6	31.6	13	68.4	19
12	7	27	19	73	26	11	39.3	17	60.7	28
13	3	10.7	25	89.3	28	23	55	19	45	42
14	1	25	3	75	4	8	61.5	5	38.5	13

These results tend to bear out the general observation that girls mature earlier than boys in social interests which appear to be related to their earlier physiological sex maturation. In spite of the small numbers of cases, the trends are unmistakable. However, the number of cases is too small in the separate age categories to establish statistically reliable differences. Some such study as this should be carried on with larger numbers of representative children in each age level.

The greater incidence of social interests shown by boys in the 12 year age level may be due to the fact that boys of this age are more easily corralled for dancing lessons than the 13-year-olds who insist on having more spare time for sports. It was interesting to note that in lieu of social activities involving girls, boys in all the five age levels tended to list as preferred activities: working with tools, doing science experiments, working with electricity, observing and participating in sports, taking pictures, playing musical instruments, going to movies, collecting things, reading.

No doubt this difference in social interests accounts for

social noncompatability of like-age boys and girls in junior high school, and explains the tendency of girls to "go with" older boys, and of boys to prefer association with their own sex.

DOLL PLAY AS A FUNCTION OF THE REALISM OF THE MATERIALS AND THE LENGTH OF THE EXPERIMENTAL SESSION[1]

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Projective doll play has become a widely used clinical procedure for the analysis of children's motivational systems. The fertility and complexity of data secured from it, however, have led its users to devote more consideration to problems of interpretation than to methodology. As a result, many variants of the basic technique have been reported, but no systematic investigation has been made of their effects on performance. If doll play is to become a fruitful, objective method for motivational analysis, detailed study must be made of the influence of important elements in the method itself.

The present study was designed to discover the effects, on certain significant aspects of doll play performance, of varying two characteristics of the procedure: kind of materials used and duration of the play session.[2] Various opinions have been expressed concerning materials, but for the most part investigators' preferences appear to have been largely a function of theoretical predisposition rather than objective information concerning the influence of different kinds of materials.

Method

Experimental Variables

The experimental design of the study required variation of materials and duration while other aspects of the procedure were held constant. Two kinds of material and two durations of the play session were used.

The materials differed with respect to their realism; for purposes of exposition they may be called low and high in degree. The high realism materials were a set of miniature real-life house furnishings and five clothed dolls. The low realism

[1] *This is the second in a series of studies of projective doll play performed at the Iowa Child Welfare Research Station under the direction of Dr. Robert R. Sears.*

[2] *In a companion study, Pintler (7) has held these two factors constant and has varied two others: amount of experimenter-child interaction and degree of organization of presented play materials.*

materials consisted of a set of ambiguous, block-like toy furniture constructed crudely to represent common chairs, tables, beds, etc. The dolls were sexless, undressed, stuffed bodies with arms, legs and head.

The two durations used were 20 minutes and one hour. The 20-minute duration was presented three times in order that both groups would have equivalent total amount of doll play. The three sessions occurred within one week but not on any consecutive days.

The materials and durations were so distributed among 40 subjects that half received one kind of materials and half the other, while half the children of each of these subgroups had a single long session and half had three short ones. These combinations produced the following subgroups of 10 subjects each:

Low realism material: long session
Low realism material: short session
High realism material: long session
High realism material: short session

Hereafter, the term "experimental variable" will refer to the materials or durations while "experimental condition" will refer to one of the above four combinations of variables.

Subjects

Forty children from the Preschool Laboratories of the Iowa Child Welfare Research Station were used as subjects. Four matched groups were constructed on the basis of sex and chronological age. There were five boys and five girls in each group and the age range for the total was from 3-0 to 5-6. The mean chronological age for each group was 48.4 months or approximately four years. The boys averaged consistently younger than the girls, ranging from 3-9 to 3-11, while the means of the girls ranged from 4-1 to 4-3. On the average, each set of four matched subjects (one of which was assigned to each of the experimental groups) had a four months age range; the minimum range was one month, the maximum, five months.

Nine of the children had had previous experience with projective play (four 16 minute sessions) in a miniature preschool (1), and were divided 1, 2, 2 and 4 among the four subgroups. The minimum time elapsed since any child's last experience with projective play was four months.

The subjects were all very familiar with the investigator; she had taught many of them in the preschool and had had frequent contact with the others.

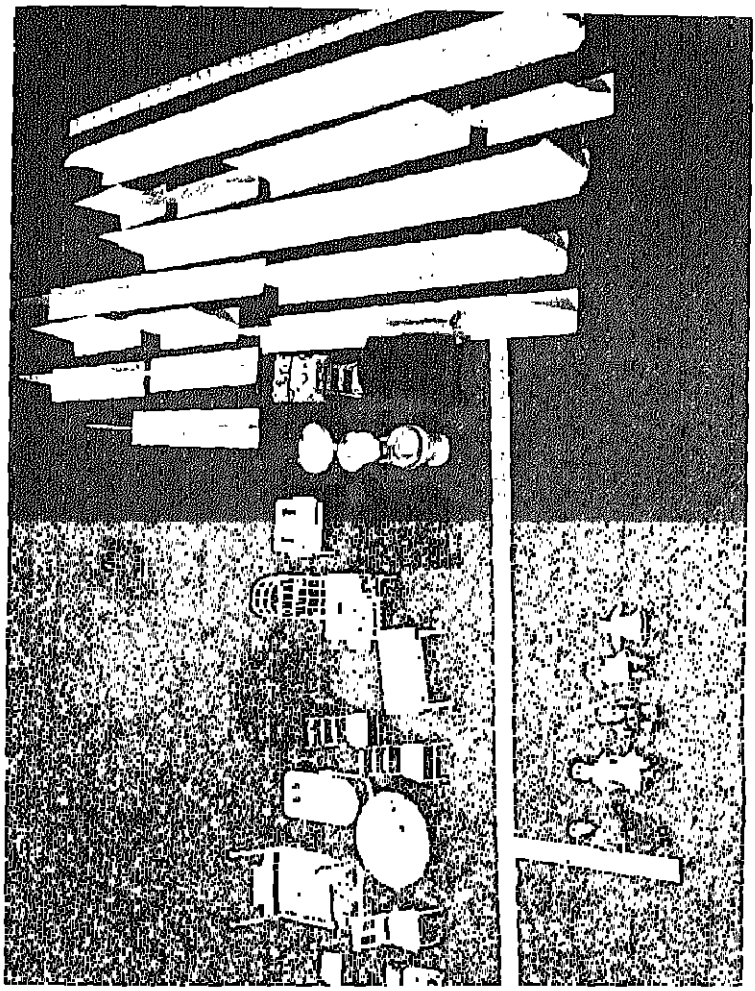

Figure 1. High Realism materials.

Equipment

High Realism Toys. The materials consisted of a living room set, dining room set, bathroom equipment, stove, sink, and three beds and a crib (see Figure 1). The largest piece, a bed, was approximately eight inches long and four and one-half inches wide, while the seat of the smallest chair was approximately three and one-half inches square, standing one and one-fourth inches from the ground. The dolls were made of wrapped string on a pipe-cleaner base, with woolen hair and kidskin feet. The clothing was cotton for all but the father, whose coat and trousers were felt. The adult dolls were five and one-half inches long, the children three and one-half inches and the baby two inches. All dolls were sufficiently flexible so that they could be placed in a sitting position. Only the baby could stand alone; its nightgown provided broader support than the feet alone on the other dolls.

In order to reduce exploratory behavior by the subjects, the number of manipulative parts on the toys was kept to a minimum. The toilet seat and cover could be lifted, but the oven door was glued shut, all faucets were immovable, and the drawers had been removed from the tables.

The white heavy cardboard uprights (or walls) were placed in a random order to the right of the toys. Subjects were not told how to use them. Each upright was three and one-half inches high and the lengths varied from four to 32 inches.

Low Realism Toys. There was a low realism toy (low fantasy support) corresponding to each of the high realism pieces, although its function was not readily recognizable by the children (see Figure 2). These toys were made of hard, white pine covered with yellow shellac. The sink, bathtub, and toilet had only pen lines to designate the hollow areas. The head and foot boards of the beds were equal in size, and the horizontal portion stood midway between top and bottom of the end pieces. The resemblance to bridges was generally noted by the children. The same white cardboard uprights, or walls, were used.

The dolls were cotton-stuffed plain cambric. Two adults, one blue and one tan, were five and one-half inches long; two children, both tan, were three and one-half inches, and a tan baby was two inches. No dolls were dressed. The hip and arm joints were very loose, allowing for sitting. The legs and arms of the larger dolls were separate and firmly crocheted to the bodies.

The toys for both sets were laid out as illustrated, spreading over approximately 38 inches. The uprights were immediately adjacent. The room was illuminated by a strong overhead light

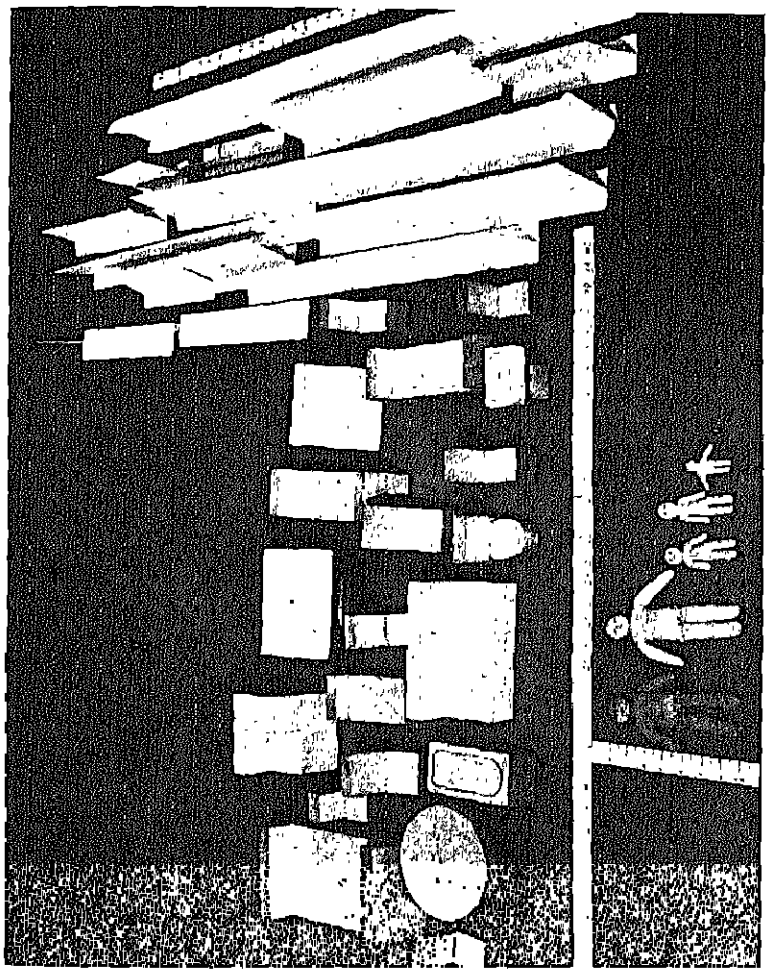

Figure 2. Low realism materials.

plus several large, low windows.

Procedure

The child was brought from the preschool to the experimental room and was shown the toys. These were placed in a random arrangement on the floor; the dolls were lined up in front and the boards on the right-hand side. This corresponds to the unorganized condition described by Pintler (7). The child was told, "Here are some toys for you to play with. You may play with them any way that you would like." The experimenter then sat on the floor fairly near the child, and while recording the play activity she maintained a friendly, interacting and interested relationship with the child the entire time. There were between 15 and 20 verbal exchanges with the subject every five minutes. This corresponds to Pintler's high experimenter-child interaction.

A sound-clock, located in an adjoining room, buzzed for approximately one second every 15 seconds. The experimenter recorded the behavior of the subject for the preceding interval as soon as the clock sounded. The judgments were made, for the most part, as the behavior occurred but were not recorded until the clock was heard.

Scoring

Without more specific information than is presently available in the clinical literature it is impossible to decide what details of doll play will prove most important for diagnosis of children's motivational systems. Some aspects that give promise of being significant are: the total amount of aggression displayed, the amount of unique or individualized doll play as contrasted with stereotyped, routine play, and the relative amount of behavior not incorporating the experimental materials, the amount of manipulation which is more or less random or nonthematic, the amount of play which portrays a story but omits the dolls, and the relative number of different themes portrayed.

The following categories were defined to provide a notational system with which doll play could be continuously recorded by the experimenter in 15-second segments. Whenever the child's behavior fell into a certain category for more than half of a 15-second interval, this category was recorded. This is important to note in instances where ongoing behavior is temporarily interrupted by another category of behavior. Decisions as to the extent of behavior within a 15-second interval were of necessity subjective. For the most part a decision could be

readily made as to whether or not the behavior had taken place for more than half of the interval.

O - Organizational

All purposeful or systematic arranging of the materials, either setting up, rearranging or disorganizing a previously organized pattern. Naming, counting or identifying dolls or other experimental equipment. Visually surveying the materials immediately following organizational or stereotyped thematic behavior.

If the child claims that there is an ongoing theme, e.g., family moving, but the behavior fits the definition of organizational, it is marked organizational.

Comments such as, "We have a table like this at home" are not considered tangential when concomitant with organization. If the entire 15-second interval is merely the child's comments regarding placement of materials, it is considered organizational.

Ox - Organizational: nonstereotyped or inappropriate

Placing the materials in a way inappropriate to an ongoing theme or specified construction.

E - Exploratory

Activity which is primarily familiarizing the subject with the equipment. Manipulation of toys such as picking up, fingering; visually surveying the materials prior to any organizational or thematic behavior at the onset of an experimental session, or immediately following tangentiality.

Comments such as "Does the door open?" "What is that?" which continue for a full 15-second interval.

T - Tangential

All behavior not incorporating the experimental materials or not related to the experimental situation. Looking out of the window, asking the experimenter irrelevant questions, such as "Is it time to go now?" walking or gazing aimlessly around the room. Thematic elaboration interrupted for more than one-half of a 15-second interval by irrelevant comments such as, "My doll at home sits down."

The child has set theme and withdraws from the situation explaining, "They're sleeping-dead" and refuses all stimulations to continue doll play.

P - Tangential play

Random manipulation of the materials. Aimless piling, swinging or pounding of equipment. Tangential but utilizing the toys.

Th - Thematic-stereotype, routine behavior

Doll action appropriate to the time, place, situation and characters involved.

NStTh - Nonstereotype thematic-individualized[3]

Any doll action or verbalization indicating an element of inappropriateness to an ongoing theme. Distortion in the role of a character being portrayed.

Detailed criteria for judging appropriate and inappropriate actions are given by Phillips (6, pp. 13-14).

STh - Self-thematic

The child uses himself as a character in thematic elaboration; he tries to fit into chairs, beds, etc. If complete identification with a doll is recognized this is not considered self-thematic. If inappropriateness is involved it is noted.

NHTh - Nonhuman thematic

No dolls are involved in thematic elaboration. No characters or persons are portrayed, e.g., car going up a hill.

Agg - aggression

Hostility as expressed by one doll to another as tone

[3]*This category and aggression are to be thought of in a one-minute frame of reference. If the observer is unable to judge at once whether or not the ongoing behavior is nonstereotyped or aggressive, but reaches a decision within one minute, changes are made in the preceding notations.*

of voice in dialogue or action. Hostility of the subject towards the dolls or other experimental materials, as well as towards the experimenter. Aggression includes portraying a destructive scene, such as windstorm, doing a forbidden act such as painting the furniture, and the slamming together of materials while organizing or disorganizing.

When the child is tangential and kicks the wall or during tangential play when he pounds the toys together or twists the dolls, the child is thought to be acting aggressively.

Interpretations consonant with the definition of aggression by Dollard, Doob, Miller, Mowrer and Sears (3): "an act whose goal-response is injury to an organism (or organism-surrogate)."

Theme change

Any change in locus of doll action as from home to school. Any purposeful shift in the meaning of the construction being completed, e.g., making a bus and change to a train.

Three types of notation were made: (a) Those symbols were assigned to each scoring interval which represented the major definitions, excluding aggression and instances of inappropriateness or nonstereotype. (b) In order that the total frequency of aggression or inappropriateness should be recorded, the notation of their occurrence was made below the behavior categories, regardless of the duration. Whether or not the child was aggressive for less than one-half of a 15-second interval, the occurrence of the behavior was noted. (c) A running score of the number of experimenter-child interactions was recorded; these were classified as either rapport or tangential stimulations according to the ongoing behavior of the subject at the time the stimulation was given (7). If the child was concerned with the toys, the stimulation was considered as rapport; if the child was tangential, the stimulation was thus classified.

A sample of the notational record is presented:

Three minutes

				H				Car			
E	E	O	O	Th	Th	T	T	P	NTh	STh	NHTh
					x	ag					
					ag						

Rapport /// Tangential //

Reliability

Pintler and Phillips observed together in order to establish the reliability of the scoring method. One observed through a one-way screen while the other acted as experimenter. After preliminary practice with the recording procedure in each of the experimental conditions, the final reliability measures were computed from four hours of experimentation. Of the eight possible combinations of variables involved in the two experiments, the following were selected; each was used for one hour.

N	Duration	Realism	Organization	Exper. stim.
1	Long	Low	Unorganized	High
3	Short	High	Unorganized	High
2	Short	High	Organized	Low
2	Short	High	Organized	High

The statistical procedure for calculating observer reliability was that of percentage of agreement. The formula was:

$$\frac{2 \times \text{the number of agreements between observers A and B}}{\text{Total number of observations of A plus B}}$$

The criteria for agreement were as follows:

1. Aggressions: if both observers noted aggression within two 15-second intervals of each other.
2. Nonstereotyped thematic, or organizational behavior: if both observers noted these items within a range of two 15-second intervals.
3. Change of theme: if both observers recorded within a range of two adjacent intervals when a new theme was introduced.
4. All other categories: if both observers recorded the same symbol at the same time.

The relative leniency in scoring the first two items noted above was adopted because the measure sought was frequency of these types of behavior rather than the exact sequence of their occurrence. For the change of theme it was extremely difficult to determine the exact interval at which the new theme started unless the child was verbalizing at the moment.

The criteria for disagreement were as follows:

1. Omission by one of the observers.
2. Failure to record the items of behavior within the limits of agreement designated above.

Table 1 presents the reliabilities for seven categories.

TABLE 1

FREQUENCY OF OCCURRENCE AND PER CENT AGREEMENT BETWEEN TWO OBSERVERS' RECORDINGS OF THE VARIOUS CATEGORIES DURING FOUR HOURS OF OBSERVATION

Category	Frequency	% Agreement
Exploratory	89	83
Organization	260	90
Thematic	849	96
Nonstereo. thematic	413	91
Tangential	366	97
Tangential play	17	59
Agression	264	83

Results

Mean Frequencies of Behavior Under the Four Conditions

The group means for each of the combinations of experimental variables are shown in Table 2. In each case the number of subjects is ten - five boys and five girls.

Outstanding differences are noted in the amount of exploratory behavior between the two high realism conditions and the two low realism conditions, with predominantly more in the former conditions. On the other hand, there was decidedly more organizational behavior with the low fantasy materials. Tangential play was relatively more frequent in the long sessions of low realism than in any other.

TABLE 2

MEAN FREQUENCIES OF BEHAVIOR UNDER EACH OF FOUR COMBINATIONS OF EXPERIMENTAL VARIABLES (N = 10)

Category of Behavior	High Real., Short Dur.	High Real., Long Dur.	Low Real., Short Dur.	Low Real., Long Dur.
Exploratory	50.1	34.9	13.4	9.6
Organizational	37.0	44.5	96.3	61.7
Inapprop. organiz.	8.3	7.2	4.8	3.5
Thematic, stereo.	54.9	52.5	40.8	51.4
Self-thematic	4.9	5.5	3.2	3.4
Nonhuman thematic	2.9	10.3	7.0	5.0
Nonstereo. thematic	32.6	24.1	17.5	18.9
Tangential	35.9	50.5	26.6	49.6
Tangential play	12.0	0.0	10.0	34.6
Tangential and tang. play	48.8	60.4	45.6	84.2
Aggression				
Total	40.9	31.0	24.8	30.4
Thematic*	33.7	23.0	16.1	17.9
Tangential	7.2	8.0	8.7	21.4
No. of themes	6.5	4.9	15.2	8.2
Aggression latency**	35.0	23.0	36.2	34.5

*Aggression occurring during session other than during tangential or tangential play.

**Mean was computed from the median score of each subject.

The Significance of the Differences Between the Means

In calculating the significance of the differences obtained between the means listed in Table 2, the "t" statistic method for matched groups was used (5). A distribution was made of the differences between scores of matched subjects, and the statistic "t" derived from this distribution to obtain the significance of the mean differences.

All the high realism subjects were compared with all the low realism; all the long, with all the short. Specifically, each high realism, long duration subject was compared with the matched subject in the low realism, long duration group, and similarly for the two short duration groups.

The results (Table 3) are expressed in terms of the significance of mean differences; l of c is the level of confidence. Minus signs indicate that the behavior category was less frequent for the first mentioned condition.

There are no significant differences between the short and long sessions in any category. In brief it may be seen that the amount of exploratory behavior, organizational behavior, tangential play and number of different themes portrayed vary significantly as a function of the realism of the toys.

The Significance of the Differences Between the Means of the First and Third 20 Minutes of Each Variable for all Categories

In order to determine the difference in the performance of the subjects in the first and last 20 minutes of a long session and the first and third independent short sessions, the same "t" test was used. The raw scores obtained for one individual for the first session were compared with the scores for the same individual on the third session (or third 20-minute period of the hour session). This was done for all four variables. The results are given in Table 4. The minus sign signifies a smaller frequency of the behavior in the initial 20-minute period.

There was a definite drop in amount of exploratory play, and some decrease in amount of organizational behavior. Aggression increased in every case, although less significantly than did tangential behavior. The rate of increase in tangential play was inconsistent for the four variables.

The mean rate of change from first to third sessions or sections for tangential behavior and exploratory behavior are represented graphically in Figures 3 and 4.

TABLE 3

SIGNIFICANCE OF THE DIFFERENCES IN FREQUENCY OF BEHAVIOR UNDER TWO EXPERIMENTAL CONDITIONS (N = 20 FOR EACH CONDITION)

Category	High vs. Low Realism		Long vs. Short Duration	
	Mean Diff.	l of c	Mean Diff.	l of c
Exploratory	31.0*	< 1	-0.5	< 10
Organizational	-30.6	< 1	-13.6	< 20
Inapprop. organiz.	3.6	20	-1.2	70
Thematic, stereo.	3.2	60	- .4	--
Self-thematic	1.9	20	.4	90
Nonhuman thematic	.6	90	-2.7	60
Nonstereo. thematic	10.2	20	-3.6	60
Tangential	6.2	70	18.6	20
Tangential play	-15.4	5	6.4	40
Tang. and tang. play	-11.3	30	25.1	10
Aggression				
Total	3.0	60	2.2	90
Thematic	11.4	10	-4.4	60
Tangential	-7.4	20	6.8	30
Theme changes	-6.4	2	-3.8	20

*Positive values indicate greater frequency in the first mentioned condition.

TABLE 4

SIGNIFICANCE OF THE DIFFERENCES IN FREQUENCY OF BEHAVIOR BETWEEN FIRST AND THIRD 20 MINUTES OF EXPERIMENTATION UNDER EACH VARIABLE (N = 20 FOR EACH CONDITION)

Category	Condition							
	High		Low		Long		Short	
	Mean Diff.*	1 of c	Mean Diff.*	1 of c	Mean Diff.*	1 of c	Mean Diff.*	1 of c
Exploratory	14.0	1	6.8	1	12.4	1	8.4	1
Organizational	0.8	6	3.4	40	8.0	10	2.7	40
Inapprop. organiz.	2.0	20	.1	--	2.6	5	-2.2	10
Thematic, stereo.	1.0	80	11.2	1	12.9	1	8.2	2
Self-thematic	.6	--	0	--	2.0	30	-1.4	10
Nonhuman thematic	-3.2	30	-1.6	30	-3.4	20	-1.4	40
Nonstereo. thematic	-3.9	20	.1	--	-2.9	30	-1.2	60
Tangential	-18.8	1	-14.2	2	-24.5	1	-9.0	5
Tangential play	-5.4	1	-5.1	30	-6.3	10	-4.2	20
Tang. and tang. play	-24.8	1	-19.2	1	-30.8	1	-13.2	1
Aggression								
Total	-11.2	1	-6.6	5	-9.5	1	-8.4	5
Thematic	-6.2	5	-3.4	5	-5.0	5	-4.6	10
Tangential	-5.0	5	-3.3	20	-4.4	20	-3.8	20
Theme changes	.6	20	.1	--	.8	10	- .4	5

*Positive values indicate greater frequency in initial 20-minute period.

Discussion

Exploratory Play

There was significantly more exploratory behavior with the high realism than with the low realism materials. This is readily understandable when one contrasts the amount of detail on the two types of furniture. Most of the exploratory behavior with the high realism materials was centered on the toilet and the stove, the former because the seat and lid would lift and the latter because the oven door should, but would not, open. The faucets on the sink, bathtub and washbowl also commanded attention.

If exploratory behavior is to be minimized in a doll play situation, the less realistic toys are better than the others. Although the subjects asked questions about the function of various pieces of this set of materials, there was little fingering or manipulation of parts.

For all the variables there was a significant decrease in amount of exploratory behavior from the first to the third sessions, or portions of the long session. Comparison of the third sessions with the high and low realism materials shows a difference significant below the 1 per cent level, the greater frequency being with the high realism toys.

The increase in amount of exploratory behavior with the high realism materials from the second to the third 20 minutes (Figure 3) implies that exploratory behavior may be closely analogous to tangential play after the initial familiarization with the toys in the first session. The child may be merely "wasting time" fingering the toys; the behavior was frequently followed by tangential play or tangential behavior.

Organizational Behavior

In contrast to the exploratory behavior, this category occurred more frequently with the less realistic materials than with the more realistic. Because of the ambiguity of the pieces there was relatively more leeway with respect to kinds of themes with which the child appeared to feel free to build. The scoring system was inadequate in that if the child was exploring in order to see how the low realism materials fit together, but was doing it systematically, his behavior was recorded as organizational. This "fitting together" almost invariably led to a systematic construction (2). However, when a subject made a pile of the block-like toys, this was recorded as unspecified organizational behavior (no theme recognized), whereas similar

behavior with the more realistic toys was classified as tangential play.

There was no consistent change in amount of organizational behavior between the first and third sessions under any variable or condition.

Figure 3

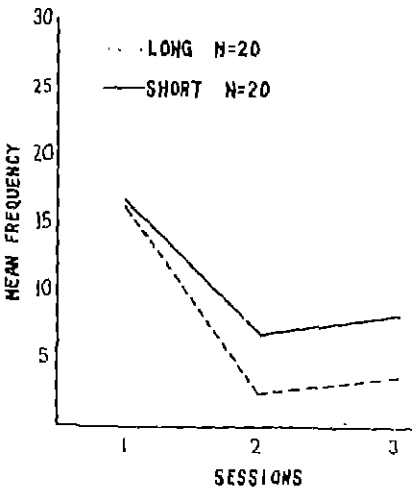

Figure 4

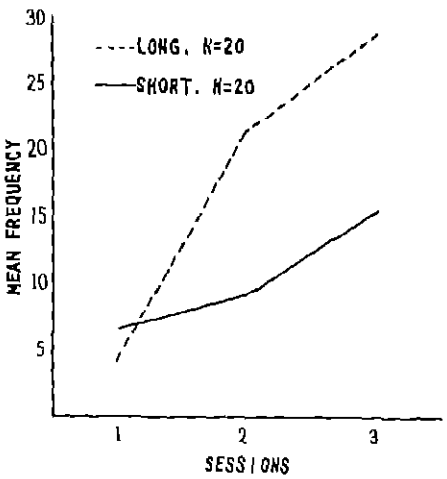

Figure 3. Mean frequency of exploratory behavior with the long and short duration variables.

Figure 4. Mean frequency of tangential behavior with the long and short duration variables.

Inappropriate or Individual Organizational Behavior

There was a greater amount of inappropriateness in the constructions made with the high realism toys than with the low, but the difference was not significant. The high stimulus relationship with the child was so defined as not to permit questions involving interpretation. Therefore, elements of inappropriateness with the low realism toys were difficult to judge unless specified by the child. With the high realism materials, on the other hand, a house built with the stove placed in the bathtub could be readily recognized as an instance of inappropriateness.

The duration factor did not influence the relative amount of this behavior.

Stereotyped Thematic Play

The experimental variables did not affect the amount of thematic behavior. In all conditions there was a decrease from the first to the third 20 minutes; this was doubtless a corollary of the increase in tangentiality.

Although there was slightly more stereotyped thematic play in the first 20 minutes of the long sessions than of the short, the mean amount was less for the remaining two-thirds of the time.

Self-thematic and Nonhuman Thematic Play

Both types of behavior were infrequent, and there were no significant differences as a function of the experimental variables. There was a consistent increase in amount of nonhuman thematic play from the first to the third 20 minutes under all conditions, but none of the differences was statistically significant.

Nonstereotyped Thematic Play

Since this may be one of the more important categories from a clinical standpoint, it is worth noting that its frequency did not vary significantly as a function of the variables tested. There was slightly more of this category with the high realism toys than with the low ones. The clinician may expect in an hour-session about the same amount of nonstereotyped doll play as in three 20-minute periods. Bach (1) found a sex difference with respect to the amount of individualized fantasy portrayed, the boys showing the greater amount, and a similar trend was noted in the present data. An analysis of sex differences will be presented in another paper (8). The amount of nonstereotyped doll play may be said to be a function of individual differences and other experimental conditions rather than of either of the two factors varied systematically in this investigation.

With the low realism materials there was a difficulty in recording somewhat analogous to that with the nonstereotyped organizational behavior category. Since the ongoing theme often utilized a crude construction, the detail necessary for denoting inappropriateness was missing. Furthermore, the block-like materials did not lend themselves to certain kinds of inappropriate uses as readily as did the more realistic ones. For example, children would stuff the mother doll into the opening under the oven. The low realism toys had no such openings.

On the other hand, the block-like toys would suggest inappropriate aspects of construction once they were assembled. Characteristically, a chair placed face down suggested a gun numerous times; a gun on a church was considered inappropriate.

There was a slight tendency for the amount of nonstereotyped fantasy to increase from the first to the third sessions.

Tangential Behavior

There was not a significant difference in the amount of tangentiality as a function of the experimental conditions. When the variables were considered independently there was a significant increase from the first to the third of the 20-minute sessions, for all except the short sessions. The mean difference for the long sessions was 2.6 times greater than the mean difference for the short sessions. The difference in the rate of increase in tangential behavior, between the long and short sessions, as measured by the difference between third session (or 20 minutes) scores, was significant below the 5 per cent level of confidence, the rate of increase being greater for the long than for the short (Figure 4).

This may have been due in part to the fact that once a child had had the initial short session, he knew that after a certain length of time he would return to the preschool. On the other hand, a child in the long period had no conception whatever of the total time he would be expected to stay in the room. In the first case, when the child became tangential, he knew that soon afterwards the period would end; therefore, he was more willing to return to the materials than was the child in the longer session. In the latter case, it was sometimes impossible to get the child to return to the equipment after a tangential episode. Two of the younger boys cried for the last 20 minutes.

Tangential Play

There was not a significant difference between the high and low realism or the two duration conditions.

As with tangential behavior, tangential play increased from the first to the third sessions.

Tangential Behavior and Tangential Play Combined

The same trends that were found for tangential behavior alone are paralleled here. The levels of confidence are better than 1 per cent for all the variables in the comparisons between

the first and third sessions.

Aggression: Thematic and Tangential

Aggression did not vary significantly in amount as a function of the experimental conditions used in this investigation. The total amount of aggression was slightly less for the short sessions with low realism, but the largest mean was for short session with high realism materials.

There was more aggression shown in the third than in the first 20 minutes for all variables. Most of the aggression was in connection with thematic play rather than with tangentiality.

The mean latency of aggression, computed from the median times of appearance for each subject under each condition ($N = 10$), was found for all four groups. The onset was earliest for high realism, long duration and latest for the low realism, short duration.

Number of Theme Changes

With the low realism toys there were significantly more theme changes made than with the high realism materials. There were nearly twice as many themes in the short sessions with these latter toys as in the comparable long ones.

The contrast between the two types of materials would probably not have been as great were it not for the scoring procedure. On the premise that the subject, when organizing, was constructing a background for a forthcoming story, all specified and unspecified organizational behavior was given theme credit. Even if the theme did not take place, the unspecified constructions remained in the theme category. Therefore, with the greater amount of organizing with the low realism materials, the greater number of themes was to be expected.

In spite of the broad definition of thematic change, there was nevertheless considerable variation in the kinds of stories played out with both sets of toys. For example, cars, boats, airplanes, churches, and so forth were constructed and played out with both. There was a greater variety, however, with the less realistic materials. It was clear that house furnishings did not have a "single, exclusive use" as Weiss-Frankl (10) asserts, and if the house furniture is considered a "limited assortment" in terms of Tallman and Goldensohn's (9) usage, it is still ample for the expression of aggression in many non-stereotyped ways.

The number of theme changes did not vary significantly from the first to the third sessions under any conditions or as a

function of any of the variables. It is to be noted, similarly, that organizational behavior did not vary significantly in amount in this same analysis.

Conclusions

1. There was relatively more exploratory and less organizational behavior with the high realism materials.
2. The opposite relation obtained with the low realism materials.
3. Other categories appeared not to be influenced by the two variables under consideration.
4. There was a significant decrease both in exploratory behavior and in stereotyped thematic play from first to third session (or 20-minute period).
5. There was a significant increase in both aggression and tangentiality from the first to third session (or 20-minute period).

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DOLL PLAY AS A FUNCTION OF EXPERIMENTER-CHILD INTERACTION AND INITIAL ORGANIZATION OF MATERIALS[1]

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Most of the literature on the uses of doll play as a projective technique during the past ten years consists of case records of its use with individual children. Its usefulness has been demonstrated most frequently in revealing the area in which the child's main problems lie, in developing a satisfactory working relationship between therapist and child, and in providing for the release of aggressions and the abreaction of anxiety. Recently the technique has been used experimentally in an attempt to modify the personality traits of normal children (2) and to investigate fantasy systematically (1).

Because of the variety of purposes for which play therapy has been used, no single criterion of "good" play has been evolved. The type of activity which the diagnostician or therapist wishes to elicit from the child is dependent upon the purpose for which the play is being used. The way in which the materials are presented and the relationship between therapist and child are dependent also upon the purpose for which the play is instituted. The literature reveals tremendous differences in the way in which the technique is applied. One worker presents the materials organized to represent a specific problem which the child is known to have. Another presents materials in an unorganized fashion and feels that the child's organization of the materials is in itself revealing. The psychoanalysts interpret the child's play to him; many therapists outside the realm of psychoanalysis take an active role in the play situation; and others remain as detached as possible from the situation.

It seems reasonable to suppose that the type of play which one gets from the child is dependent to some degree upon the way in which the materials are presented and the degree to which the therapist interacts with the child. Up to the present, no experimental investigations have been made to reveal the relationship between such variables and the type of play which is elicited.

[1]*This is the third in a series of studies of projective doll play performed at the Iowa Child Welfare Research Station under the direction of Dr. Robert R. Sears.*

The aims of the present study are:

1. To evolve an objective quantitative system of scoring which will have a known reliability and will utilize categories for the analysis of play content which are meaningful in terms of the various uses which are made of the technique.

2. To isolate and control the variable of experimenter interaction with the child and to discover the effect of varying the amount of such interaction.

3. To discover the effect of presenting the play materials in an organized or unorganized fashion.

Forty preschool children took part in three 20-minute play sessions each. With half the group, a low level of experimenter interaction with the child was maintained. With the other half, the interaction was at a much higher level. Twenty of the children received the materials organized in the form of a conventional house. For the others, the materials were unorganized. Quantitative analysis of the records revealed the effect on play of the above variations of technique.

Experimental Variables

Experimenter Interaction with the Child

In the doll play situation, the possible experimenter interactions with the child may be analyzed into the following categories:

1. Rapport establishing and maintaining: This refers to any activities, on the part of the experimenter, designed to make the child feel at ease in the experimental situation and to orient him to the task at hand. It includes answering the child's questions about the experimental materials, showing interest in the child's activities with the dolls and materials, maintaining a certain amount of physical distance between experimenter and child, and reassuring the child when he shows anxiety.

2. Stimulation to stay in the experimental situation: This refers to any attempts by the experimenter to keep the child's interests and activity centered on the experimental materials.

3. Generalized stimulation toward thematic elaboration: This refers to all efforts by the experimenter to get the child to continue with a theme he has already started or to go on to a new one - but not stimulation toward any specific theme content.

4. Specific stimulation of child to extend theme or to initiate a particular theme: This refers to the experimenter's attempt to get the child to elaborate and extend a theme which he has already been carrying on. For example, when the subject has made the little girl doll hit the father, the experimenter might

say, "Oh, she hit the daddy - what will he do to her now?" This is considered as a specific attempt to extend the theme. The experimenter might attempt to introduce a particular action by such a question as "Does the daddy spank the little girl?"

5. Experimenter asks child for interpretation of the story: Such remarks as "Why did the boy do that?" "Does she like to be a little girl?" etc., are illustrative of this type of stimulation.

6. Experimenter interprets the child's play: This type of stimulation is designed to give the child insight into the meaning of the play sequences which he is producing and to reveal to the child his underlying motivational systems.

In attempting to control the variable of experimenter interaction with the child, it was not feasible to work out precise questions to be used with every child at definite time intervals. Instead, two levels of experimenter interaction with the child were defined which represented very different degrees of interaction. Only the first three of the categories given above were utilized, and a range of frequency for interaction was maintained. The following description illustrates what is meant by low and high levels of experimenter interaction with the child as they were used in this study.

Low Level of Experimenter Interaction with the Child

This situation was characterized by the minimum amount of experimenter interaction with the child consistent with having the child made aware of the test materials, and enough at ease so that he would feel free to manipulate them as he pleased. The child felt that the experimenter was engrossed in her own work, and only incidentally aware of what he was doing. The situation was handled in the following way, after the preliminary standardized directions were given to the child.

1. Rapport establishing and maintaining

a. Experimenter went to her seat at a table a few feet from the child and devoted herself to her records.

b. Child's questions about materials were answered briefly and factually - with the experimenter returning at once to her records.

c. The only encouragement given to the child was in the form of an occasional smile if the child looked up and seemed to expect some response or if he seemed anxious. If he asked, "Is that all right?" after he had done something, the experimenter answered, "Yes, of

course, you may do anything you want."

2. Stimulation to stay in the experimental situation, i.e., control of tangentiality

a. In general, the experimenter ignored the child's tangential remarks and tangential behavior. If necessary, his tangential questions were answered very briefly and in a noncommittal way.

b. No attempt was made to keep the child's attention directed to the experimental materials.

c. If the child tried to leave the room the experimenter said, "It isn't time to go yet. You stay in the room. As soon as it's time to go back and I've finished my work, I'll take you. You may play here any way that you like." The only limit placed on the child's tangentiality was the boundary of the experimental room.

3. Quantitative limits of interaction

a. The experimenter used not more than a total of five such interactions during any five-minute period.

High Level of Experimenter Interaction with the Child

This situation was characterized by considerable interaction between the child and the experimenter. The child was made to feel that the experimenter was an interested onlooker of his activity - that what he was doing was of interest to her - and that she was aware of all his behavior. The situation was handled in the following way after the preliminary standardized instructions were given.

1. Rapport establishing and maintaining

a. The experimenter sat on the floor beside the child - looked at the toys - scored unobtrusively.

b. The child's questions were still answered briefly and factually (i.e., questions about the materials) but the experimenter continued to devote her attention to the child and the materials, thereby giving the child the feeling that he was expected to play with the materials in some way.

c. The experimenter showed her interest by smiling, laughing with the child, nodding her head approvingly when he had carried through some play sequence with the materials.

d. Since in the high level of experimenter interaction with the child, the child was aware that the experimenter was interested in and cognizant of all his play activity, it was necessary for her to react to and reassure the child when he showed evidence of anxiety feelings. The child's anxiety was often aroused when he had had the dolls perform some unconvential or generally-forbidden act, or when he had carried through a particularly aggressive sequence. His anxiety could be recognized by such behavioral symptoms as anxious looks at the experimenter, sudden cessation of a sequence of doll play which he had started, or sudden requests by the child to return to preschool. The experimenter handled such situations by maintaining at all times a matter-of-fact attitude, regardless of what the child did. She smiled reassuringly if the child looked anxious, or laughed with the child if he seemed to be resorting to this type of behavior to cover up his anxiety. If the child asked, "Is that all right?" after having done anything, the experimenter answered, "Yes, of course, you may do anything you want."

2. Stimulation to stay in the experimental situation, i.e., *the control of tangentiality*

Every effort was made to keep the child's attention centered on the experimental situation. In other words, there was an attempt to establish a boundary around the experimental situation itself - not extending it to include the whole room as was done in the low level situation. The best method to use in reducing the amount of tangential behavior depended upon the particular child. At no time did the experimenter's efforts in this line go so far as to create a frustration situation for the child. The following concrete methods were used:

a. Ignored the child's tangential remarks or behavior.

b. Indirectly attempted to draw the child back to the experimental situation by asking, "What are the dolls going to do next?"

c. Participated with the child in the tangentiality to the degree of answering his questions briefly, looking at something he pointed out, or leaving the immediate area of the experimental situation to follow him. After the brief participation, the experimenter attempted to get the child back to the experimental equipment by returning herself.

d. Attempted to satiate the child's interest in anything

outside the experimental situation by a dull and boring explanation of it.

e. Expressed firmly the desirability of the child's returning to the experimental situation.

3. Generalized stimulation toward thematic elaboration

a. The experimenter described objectively an action sequence which was taking place in a tone of voice which suggested further elaboration. For example, "Oh, the little girl is setting the table . . ."

b. Repeated in an encouraging tone of voice anything the child had just said.

c. Facilitated the child's production of a sequence by carrying out the child's suggestion that the experimenter place a doll in a specific chair, etc.

d. Made facilitating remarks such as, "Oh, yes. I see. And what happens next? What do they do now?"

4. Quantitative limits of interaction

a. The experimenter used a total of not less than 15 nor more than 20 such interactions during any five-minute period.

Organization of Materials

Unorganized Method of Presentation

The experimental materials were spread out on the floor in two irregular rows (see Figure 1). The items which are conventionally placed together in a room, such as a stove and refrigerator, were separated to prevent the suggestion of any definite arrangement to the child. The cardboard walls were placed to the right of the other materials and at right angles to the rows. The five dolls were placed in a row below the other materials in the following order from left to right: father, mother, girl, boy, and baby.

Organized Method of Presentation

The same experimental materials were now organized into a conventional house consisting of a living room, dining room, kitchen, two bedrooms, and a bath (see Figure 2). The movable cardboard strips formed the walls of the house and divided the space into rooms. The five dolls were placed in a row below

and outside the house in the same order as before.

Method

Subjects

Forty children from the Preschool Laboratories of the Iowa Child Welfare Research Station were used in this study, 20 of each sex. Children in this preschool are a somewhat selected group from homes of higher than average socio-economic status. They rank above average in intelligence. The age range was from 3-10 to 6-3. The subjects were divided into four experimental groups, each consisting of five boys and five girls. Subjects were matched on the basis of sex and chronological age. That is, a girl in Group I was matched with a girl of the same approximate chronological age in Groups II, III, and IV. The same procedure was followed for the boys.

The conditions under which each group of ten children was treated and the mean chronological ages of the subjects were as follows:

			Mean C.A.
Group I	Low interaction	Unorganized materials	4.97 years
Group II	Low interaction	Organized materials	4.86 years
Group III	High interaction	Unorganized materials	4.96 years
Group IV	High interaction	Organized materials	4.95 years

Nine of the subjects had had previous experience with doll play, having served as subjects in an earlier study. Two such sophisticated subjects were used in Group I, three in Group II, two in Group III, and two in Group IV. At least three months had elapsed between the former play sessions and the present ones in the case of each of these subjects, and the mean number of months which had intervened was 4.9.

Materials

The experimental materials consisted of cardboard strips, five dolls and a set of miniature household furniture. The cardboard strips were constructed of two layers of heavy cardboard and had projecting edges so that they might be stood upright to form the walls of the house. The height of the strips was three inches and the lengths varied. When the house was set up for organized presentation its length measured 38 inches and its width 25 inches.

The five dolls represented a family consisting of father, mother, a preschool-age girl, a preschool-age boy, and a baby.

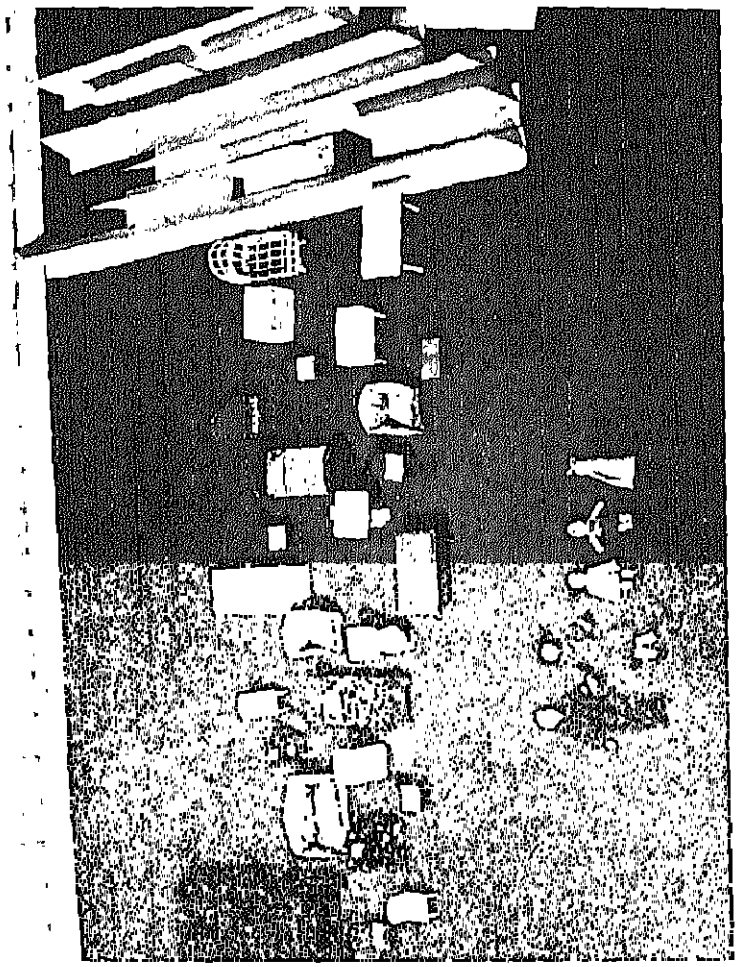

Figure 1. Unorganized presentation of materials.

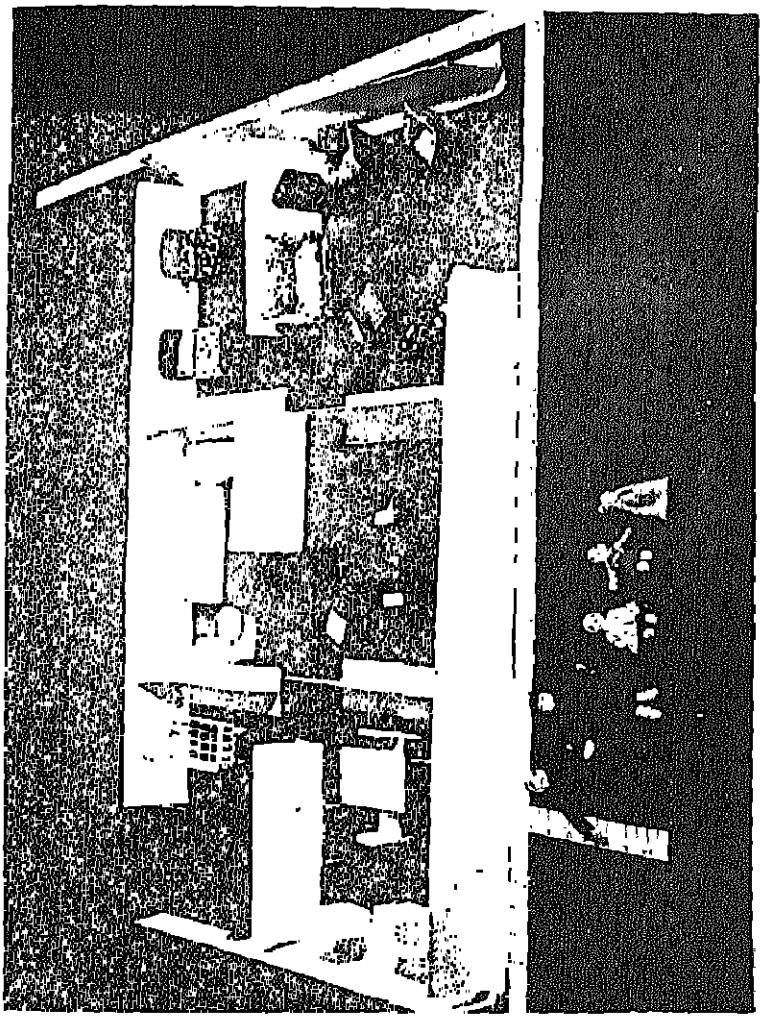

Figure 2. Organized presentation of materials.

The dolls were life-like in appearance and were conventionally dressed. Their clothes were not removable. The dolls' heights were as follows: mother, six and one-fourth inches; father, six and one-half inches; boy and girl, three and one-half inches; baby, two and one-half inches. The furniture was proportional to the size of the dolls and was realistic in appearance. The pieces of furniture for the living room were a piano and stool, davenport, radio, and three easy chairs; for the dining room, a table and five chairs; for the kitchen, a sink, stove, icebox, table, and two chairs; for the two bedrooms, a large double bed, two smaller beds, and a crib; for the bathroom, a tub, toilet, and washbowl.

Procedure

When the experimenter took the child from the preschool, she said, "I have some toys for you to play with across the street. We'll go over to see them now." Conversation with the child until he reached the experimental room consisted of any subject felt to be of interest to the child and of use in making the child aware of the experimenter as a friendly person. Upon entrance into the experimental room the experimenter went with the child to the toys, and said, "See, here are all the toys; you may play with them any way you like."

In the condition of low interaction with the child, the experimenter then said, "I have some work to do over here (went to table three or four feet away from child); you go ahead and play any way you like." The experimenter began scoring as soon as she was seated at the table.

In the condition of high interaction with the child, the experimenter sat down on the floor near the child and to his left, unobtrusively picked up her scoring sheet, looked at the experimental materials expectantly, and said, "You can play with them any way you like." Scoring was begun immediately.

The automatic timing device located in an adjoining booth was running from the time the child entered the experimental room. It made a buzzing sound every 15 seconds. If the child noticed this sound or asked about it he was told, "That sound is a clock in the other room. It makes that buzzing noise every 15 seconds. That's the way it keeps time."

In the low interaction situation, if the child asked the experimenter what she was doing at the table, he was told, "This is just some work I have to do," and the experimenter continued to devote herself to the scoring sheet and folder of papers which she had on the table. If the child came over to the table and asked about the symbols on the record sheet, he was told, "This

is the way I keep track of the time."

In the high interaction situation where the recording was done in close proximity to the child, questions about this were likely to be more frequent. The experimenter answered such questions by saying, "I just keep track of the dolls and furniture this way," and tried to divert the child by saying either, "You can play with the toys any way you like," or, if play activity had been going on before, "Now, what's going to happen next?" Care was taken to prevent giving the child the idea that the actions of the dolls or his own verbalizations were being taken down.

At the end of 20 minutes, the experimenter said, "Well, our time is up for today; we'll go back to preschool now. Maybe you can come play with the toys some other time."

Each child took part in three 20-minute play sessions. At least one day intervened between any two sessions. Except for one subject, the time between sessions never exceeded one week. For the entire group, the average number of days elapsing between Sessions 1 and 2 was 1.82 days; and between Sessions 2 and 3, 1.78 days.

Categories and Scoring

The child's behavior and his play (both thematic and nonthematic) were recorded by the use of the following symbols: E, exploring behavior; O, organizational behavior; Th, stereotyped thematic play; Th_x, nonstereotyped thematic play; P, tangential play with the experimental materials; T, tangential behavior not involving the experimental materials; Ag, aggressive behavior of a thematic or nonthematic type.[2] The number of different themes and the time at which the dolls were first used by the subject were noted.

The child's behavior was recorded in terms of these symbols, a single symbol being used for each 15-second interval. If more than one type of activity occurred within any 15-second interval, the one occurring for the greatest length of time was recorded. Nonstereotyped or inappropriate organizational or thematic play, regardless of duration, was indicated by an x below the symbol in the time interval in which it occurred. Aggressive behavior was also recorded in conjunction with whatever other symbol was used to indicate the ongoing activity at the time.

The amount of experimenter interaction with the child was recorded by tally marks below each five-minute section of the

[2]*For more complete description of scoring method, categories and reliability, see Phillips (7).*

record. Those interactions designed to keep the child in the experimental situation were recorded separately from those of a generalized or rapport type.

The final record for each session consisted of 60 notations in sequence, one for each 15-second interval, and additional notations for aggressions or nonstereotyped organizational or thematic play associated with some of the 60.

Reliability

Reliability of the recorded observations was computed on the basis of four hours of doll play presented under the various conditions of this study and that of Phillips.[3] One observer sat behind a one-way screen and recorded the session independently of the other observer who was conducting the experimental play session.

Reliabilities for the various categories were computed on the basis of percentage of agreement using the following formula:

$$\frac{\text{2 times the number of agreements of observers A and B}}{\text{Total observations of A plus the total observations of B}}$$

The percentages of agreement for the totals of each of the categories except one ran from .72 to .97. Tangential play, which occurred very infrequently (only 18 times in the four-hour period), had a reliability of .59. The mean reliability for all the categories (except tangential play) was .90.

In computing the reliability for the interactions of the experimenter with the child, the Pearson product-moment coefficient of correlation for raw scores was used. For both the rapport and tangential interactions in the high and low levels of stimulation, the coefficients of correlation ranged from .88 to 1.00.

Results

For an evaluation of the differential effects of the variables of experimenter-child interaction and initial organization of materials, certain salient characteristics of doll play have been examined.

Table 1 shows the mean frequency of each category during the three 20-minute sessions of doll play for each of the experimental conditions. Note the wide variation in frequency for stereotyped organizational and nonstereotyped thematic play and thematic aggression for the different experimental conditions.

The amount of stereotyped thematic play, in terms of per-

[3]See Footnote 2.

TABLE 1

MEAN FREQUENCY OF EACH CATEGORY DURING THREE 20-MINUTE SESSIONS OF DOLL PLAY UNDER FOUR EXPERIMENTAL CONDITIONS (N = 10 IN EACH CONDITION)

Category	High inter. Unorg. mat.	High inter. Org. mat.	Low inter. Unorg. mat.	Low inter. Org. mat.
Exploratory	23.9	20.2	25.8	21.1
Organizational	69.3	24.7	74.6	46.4
Inapprop. organiz.	2.6	2.9	3.5	6.5
Thematic, stereo.	68.5	59.2	61.2	60.5
Self-thematic	1.4	12.9	1.9	.2
Nonhuman thematic	6.7	3.3	1.0	.1
Nonstereo. thematic	34.8	73.5	19.4	31.0
Tangential	26.1	32.9	40.1	51.3
Tangential play	6.8	10.6	12.5	22.9
Tangential and tang. play	32.9	43.5	52.6	74.2
Aggression				
Total	25.5	60.6	16.2	14.8
Thematic	24.5	57.9	10.1	13.9
Tangential	1.0	2.7	6.1	.9
No. of themes	5.9	6.2	4.4	3.3
Aggression latency*	32.1	17.6	55.8	53.2

**In terms of median interval at which aggression began during the three sessions. The smaller the number, the earlier aggression occurred.*

centage of total thematic play, varied among the experimental conditions as follows:

High interaction	Organized materials	39.8%
High interaction	Unorganized materials	61.5%
Low interaction	Organized materials	65.9%
Low interaction	Unorganized materials	73.3%

High experimenter-child interaction in combination with an organized presentation of materials resulted in the lowest proportion of stereotyped thematic play.

Table 2 presents the mean differences and the reliability of these differences for each of the categories between different amounts of experimenter-child interaction and different degrees of organization of materials. Since the subjects had been matched on the basis of sex and chronological age, they were more likely to be similar than cases independently selected. The technique suggested by Lindquist (4, pp. 58-59) for use in such cases was followed. The difference for each pair was found and then, for this distribution of differences, it was determined whether or not the mean of the distribution (the mean difference) differed significantly from zero. The t-test for determining the significance of a difference in the means of related measures was used.[4]

Nonstereotyped thematic play, thematic aggression, total aggression, and the time at which aggression begins (i.e., its latency), were significantly different with different amounts of experimenter-child interaction. The different organizations of materials resulted in reliable differences at the 2 per cent level of confidence or less for the categories of stereotyped organizational behavior and thematic aggression.

Figure 3 represents the mean occurrence of tangential behavior and tangential play combined for the first, second, and third sessions of doll play under conditions of high and low experimenter-child interaction. Although the difference found in this category is reliable at less than the 10 per cent level for the sessions combined, it can be seen from the graph that the frequency of tangential behavior and tangential play increased more rapidly under conditions of low interaction than high interaction as the sessions progressed. The mean difference for this category computed for the third sessions only was

[4] *The formula (4, p.59) used was* $t = \frac{M_O - M_H}{\sqrt{\frac{d^2}{n(n-1)}}}$

TABLE 2

MEAN DIFFERENCES UNDER CONDITIONS OF HIGH AND LOW EXPERIMENTER-CHILD INTERACTION AND ORGANIZED AND UNORGANIZED PRESENTATION OF MATERIALS
(N = 40)

Category	High and low experimenter-child interaction		Organized and unorganized presentation of materials	
	Mean diff.*	p	Mean diff.	p
Exploratory	-1.4	80	-4.2	40
Organizational	-13.5	20	-36.4	1
Inapprop. organiz.	-2.3	50	1.7	60
Thematic, stereo.	3.0	80	-6.1	60
Self-thematic	6.1	30	4.9	40
Nonhuman thematic	4.4	5	-2.2	20
Nonstereo. thematic	29.0	1	22.2	5
Tangential	-16.2	20	9.0	50
Tangential play	-9.0	40	7.1	50
Tangential and tang. play	-25.2	10	16.1	30
Aggression				
Total	27.6	1	16.8	5
Thematic	29.2	1	18.6	2
Tangential	-1.6	60	-1.8	50
No. of themes	2.2	5	- .4	70
Aggression latency**	29.6	1	8.6	20

*Positive differences are in favor of high experimenter-child interaction or organized presentation of materials. Negative differences in favor of low experimenter-child interaction or unorganized presentation of materials.

**Medians used in this computation. Positive differences indicate aggression entered earlier with high experimenter-child interaction and with the organized presentation of materials.

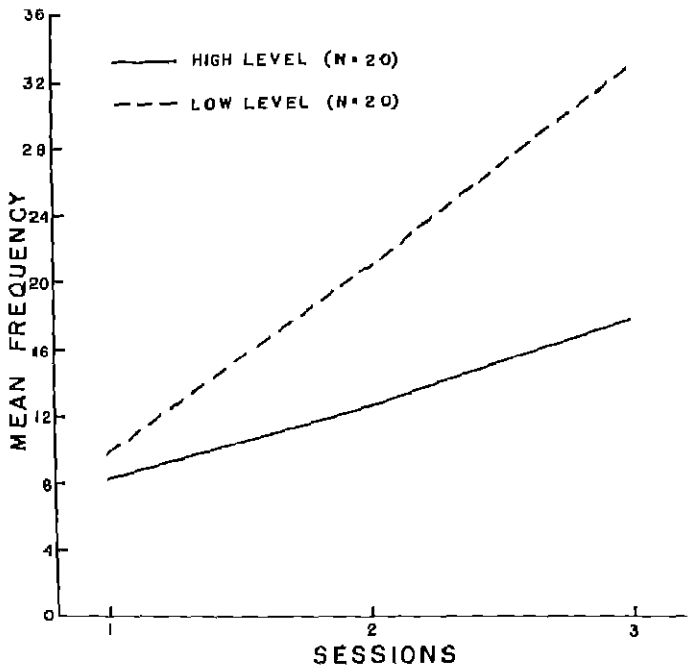

Figure 3. Mean frequency of tangential and tangential play behavior during three sessions of doll play with high and low levels of experimenter-child interaction.

found to be reliable at the 5 per cent level.

Figure 4 shows the median time at which aggression occurred during Sessions 1, 2, and 3 for the total group of 40 subjects. It is apparent that aggression tended to enter earlier as the sessions progressed.

Discussion

The findings of this study are discussed under the headings of the main categories used in recording behavior during the play sessions.

Exploratory

Exploratory behavior of the child during doll play was not reliably affected by either of the variables of this study.

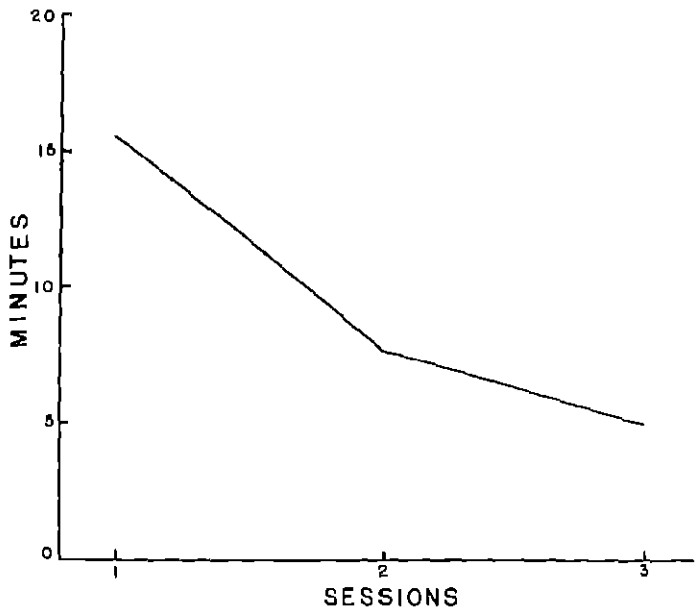

Figure 4. Median latency of first occurrence of aggression during three 20-minute sessions of doll play (N = 40).

Organizational

As would be expected, this type of behavior was found to be highly related to the way in which the materials were presented. When the materials were offered in an unorganized fashion the child exhibited a large amount of stereotyped organizational behavior. The difference found in this category under conditions of organized versus unorganized presentation of the materials was significant at less than the 1 per cent level. There is slight evidence (reliable at the 20 per cent level) that low interaction between experimenter and child also leads to a greater frequency of stereotyped organizational behavior.

Nonstereotyped or inappropriate organizational activity occurred infrequently under all conditions, and was not reliably affected by the two variables studied.

Stereotyped Thematic

This type of behavior, characterized by appropriateness of the doll action to the time, place, and situation, was not reliably

affected by either the amount of experimenter-child interaction or the degree of organization of materials. This finding may be of value to the therapist concerned with setting up the most advantageous conditions for procuring this type of activity, if later studies reveal that such stereotyped activity simulates the actual conditions of the child's every-day life. This was one of the most frequently occurring categories under all the conditions of this study. The finding that stereotyped thematic play comprised a much smaller percentage of total thematic play under conditions of high interaction combined with organized materials was due more to the increase of other types of thematic activity under this condition than to any lessening in the amount of stereotyped thematic play itself.

Nonstereotyped Thematic

It is of particular interest to find that nonstereotyped thematic play is reliably related to the level of experimenter-child interaction (reliable at less than the 1 per cent level). This category includes the inappropriate, distorted types of doll action which are felt by many therapists to give insight into the underlying causes of the child's adjustment difficulties. It should be remembered that the high level of interaction used in this study consisted of stimulation of a most general sort. There was no pressure put on the child to carry out or extend a particular theme. It was the impression of the experimenter that the friendly interaction between the child and herself tended to allay any tension and anxiety the child may have felt, and thus made him feel free to indulge in generally-forbidden acts. After the child began unconventional doll acts and found that the experimenter offered no objections to such activity, anxiety was further diminished. Recognition of the effect of such interaction between experimenter and child should be of use to the therapist interested in stimulating this type of doll play. There is slight evidence (reliable at less than the 5 per cent level) that the organized presentation of materials also contributes to the more frequent occurrence of nonstereotyped doll actions.

The category of nonhuman thematic activity occurred with low frequency under all the conditions of this study. None of the differences found were highly reliable, though there is some evidence (reliable at less than the 5 per cent level) that conditions of high interaction favor the occurrence of this. It is interesting to note that this kind of activity occurred in only 17 of the 40 subjects used. Of this 17, only seven children contributed five or more instances of such behavior during the three sessions.

Likewise, the category of self-thematic play occurred infrequently. Only 13 of the 40 subjects ever exhibited this type of behavior, and out of this number only four children contributed five or more instances during the three sessions.

The fact that both nonhuman thematic play and self-thematic play are utilized by only certain children suggests that further study might profitably be made to discover whether the use of this type of play is indicative of any particular pattern of adjustment on the part of the child.

Tangentiality

It was expected that in the high interaction situation, the experimenter's attempts to limit the boundary of the situation to the experimental materials themselves would result in a lessening of all tangential behavior. This did not prove to be the case. For tangential behavior, tangential play, and the combination of these two, no reliable differences were found, although the trend was in the expected direction. It is worth while to note that although under high and low levels of interaction the frequency of all tangential behavior was approximately the same during the first session of play, the increase in frequency during the next two sessions was at very different rates. By the third session the difference in frequency was significant at the 5 per cent level, with high interaction favoring less tangentiality.

The variable of organization of materials does not reliably affect the amount of tangential behavior found, though here the tendency is in the direction of high organization contributing to greater tangentiality.

Aggression

Thematic aggression, that is, aggression as a part of a theme which is being played out, was found to be reliably related to both of the variables of this study. A significantly greater amount of thematic aggression was found under conditions of high interaction than under low interaction (reliable at less than the 1 per cent level). An organized presentation of materials also led to a reliably greater amount of this type of aggression (less than the 2 per cent level). In view of the wide use which is made of doll play as release or abreaction therapy, this finding is of particular importance.

Tangential aggression, that is, any aggression which occurred apart from thematic production, showed no reliable differences with either of the variables of this study.

When thematic and tangential aggression were combined, the difference in favor of high interaction was still reliable at the 1 per cent level. For the organization variable the difference was significant at less than the 5 per cent level, with the organized presentation of materials leading to greater aggression.

In the high interaction situation aggression began reliably earlier than under any of the other experimental conditions. It is also of interest to note that aggression tended to enter earlier as the sessions progressed. For the entire group of 40 subjects, the median time at which aggression first appeared during Session 1 was after 15 minutes of activity. By the second session, aggression entered after seven minutes, and in the third session by the end of five minutes. This might indicate a lessening of inhibition on the part of the child, due to the fact that his earlier aggressive actions had met with no criticism from the experimenter.

Number of Theme Changes

The number of theme changes was greater under conditions of high interaction (reliable at the 5 per cent level) than under conditions of low interaction. The organizational variable was not reliably related to this category.

It is of interest to compare these findings with those of Bach (1) in regard to the effect of experimenter-child interaction. Bach defined the function of each type of stimulation which was used with the child, but did not hold constant the amount of stimulation which the child received. That is, a greater amount of stimulation was given to the thematically nonproductive subject than to the productive one. He did not record general rapport stimulation, and many of the types of stimulation which he did use, such as stimulation in the direction of a specific theme, identification stimulation, and actual demonstration of sequences, were not used in the present study.

Bach found a correlation coefficient of -.055 between total amount of verbal stimulation and the relative frequency of occurrence of all kinds of nonstereotyped actions. In the light of the present study it would seem reasonable to suppose that this low correlation might be explained by the fact that the amount of stimulation was varied according to the apparent need of the child. The lower amount of stimulation given to the thematically productive child may not have provided the optimum condition for the production of nonstereotyped fantasy, while the higher stimulation of the thematically nonproductive child may have provided for the greater occurrence of this type of response. Thus the children would tend to be somewhat equated in their

production of nonstereotyped responses by the amount of stimulation which the experimenter gave, and no one to one relationship would be revealed between amount of stimulation and productivity of nonstereotyped responses.

Other workers utilizing doll play have, on the whole, been content with defining the interaction between experimenter and child in very general terms. Despert (3), for example, defines the experimenter's role as one of "passive participation" since no ideas, suggestions, or interpretations are made by the experimenter. However, the experimenter does give a great deal of encouragement and asks numerous questions of a what, why, and how nature. Since the present study has shown such a significant relationship between amount of experimenter - child interaction and amount of nonstereotyped and aggressive fantasy production, it would seem that this factor should be carefully controlled wherever a comparison of the play records of children is desired.

Lowenfeld (5) and Murphy (6) have stressed that the way in which a child organizes or patterns the play materials may be of clinical significance. The present study made no attempt to analyze organizational behavior into various categories. It is obvious that when one wants to study organizational behavior, per se, an unorganized presentation of materials will lead to a greater occurrence of this type of behavior. However, the finding that an organized presentation of materials leads to a greater expression of aggression during doll play should be of interest to those who are not concerned with organizational behavior in and of itself.

Conclusions

1. The amounts of exploratory and tangential behavior and stereotyped thematic play were not reliably affected by either of the variables studied.

2. An unorganized presentation of materials led to greater frequency of organizational behavior.

3. The amount of nonstereotyped thematic play and the number of theme changes were both reliably greater under conditions of high interaction between the experimenter and child.

4. The categories of nonhuman and self-thematic play were utilized by comparatively few children.

5. Thematic aggression was reliably greater in amount under conditions of high experimenter-child interaction and under organized presentation of materials.

6. Aggression began earlier under conditions of high interaction. Aggression also tended to begin earlier as the sessions progressed.

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CREATINE EXCRETION IN ADOLESCENTS[1]

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Previous studies have indicated that whereas creatine is found in the urine of young children, it is normally absent in the urine of adult males, and appears only sporadically and at low concentrations in the urine of adult females (12, 24). Since the creatine excretion which reappears in aged men and women past the menopause may be reduced or abolished by the administration of sex hormones (32), it is possible that the cessation of creatine excretion might serve as a useful index of sexual maturity in children. In order to test this hypothesis, urinary creatine measurements were included in a cumulative study of adolescence carried out by the Institute of Child Welfare at the University of California (14). The results of these analyses serve as the basis for the following report.

Experimental

Subjects. The subjects for the cumulative study were 50 girls and 50 boys chosen from the University of California Adolescent Growth from five elementary schools of Oakland, California.[2] Since repeated testing of the same subjects was contemplated, selection of the subjects was based on the probability of their permanent residence and the cooperation shown by their parents. Although the children had a mean age of 11.87 years (S.D. = 0.5 year) when the study was begun, laboratory facilities for urine analysis were not available until the children had attained a mean age of 13.5 years. Each child was retested at intervals of 6 months over a 5-year period. Although

[1]*From the Institute of Child Welfare and the Division of Physiology, University of California, Berkeley. Assistance in the preparation of these materials was furnished by the personnel of Work Projects Administration O. P. 465-03-3-631, Unit A-8 and O. P. 65-1-08-62, Unit A-8. The staff of the Oakland Public Schools cooperated in making the subjects available for study. During the course of the investigation Mrs. Olga Nave, Mr. Theodor Chernikoff, Miss Helen Brien, Mr. P. M. Tuttle, and Mrs. Katherine Heck Long rendered valuable technical assistance.*

[2]*A more detailed description of the procedure and methods used in this study is given by Jones (14).*

the total number of children in the sample was 100, the number of urine specimens obtained varied somewhat from year to year, giving an N of 20-30 for girls, and 30-42 for boys.

Procedure. Morning urine samples, representing the nighttime excretion were obtained on two successive mornings from each subject, at 6-month intervals. Urinary volume and specific gravity were recorded. Qualitative tests for sugar and albumen, and quantitative estimates of creatine, creatinine, and total nitrogen were made. Night urine samples were employed chiefly because the night urines represented the excretion of a period which was relatively more standard for the group and minimized the effect of certain factors, such as sunlight (7) or muscular activity, which may influence the creatine and creatinine output (20, 41). Furthermore, the use of night urines obviated the difficulty of 24-hour urine collections which could not have been accomplished in a large group of normal children of the ages studied. In a series of preliminary tests it was found that, although the amount of creatine and creatinine excreted was less during the night than during the day (11), creatinuria did not disappear at night, as reported by Denis and Minot (6), or Powis and Rapier (27). Since creatinuria is influenced by a number of factors which may vary during the day, there is, perhaps, greater physiological significance to night time creatinuria.

Analysis for creatine and creatinine were carried out by the Benedict modification (1, 2) of the method of Folin (10). Basal metabolism determinations were made on each day by the Tissot open circuit method (35). Anthropometric measurements, including height, weight, and stem length (length from top of head to ischial tuberosities) were made in duplicate on each child.

Treatment of data. The level of creatine excretion was estimated in each urine sample by calculating the ratio of creatine to creatinine concentration in the same sample. This calculation eliminated the effect of urine dilution or concentration following changes in water intake and minimized the effect of body size. The efficacy of this procedure was tested in 6 subjects who furnished complete 24-hour urine samples. The creatine excretion per unit of creatinine content (creatine/creatinine ratio) of the night specimens gave essentially the same values as those obtained from 24-hour urine specimens analyzed on two different occasions for each subject.[3]

[3]*The mean creatine/creatinine ratio for night-urines of six subjects was .087, whereas the mean value for 24-hour specimens collected at the same time was .081.*

The average values for creatine concentration per unit of creatinine (creatine/creatinine ratio) were calculated for the duplicate analyses made on two successive days. Averages were calculated according to chronological ages. Individual curves were also plotted and compared with growth curves of height, weight, stem length, basal metabolism, and other measurements taken at the same time on each subject.

Results

Reliability. The correlations between measurements of the creatine/creatinine ratio made on two successive days varied between 0.72 ± .07 and 0.83 ± .05 for different ages.[4] No systematic change in reliability with age or sex was observed. The correlation between determinations made at 6-month intervals dropped to 0.32 ± .10. These correlations indicate a fair degree of reliability when the mean of observations on two days are used. They also show that significant changes in the creatine/creatinine ratio occur in children over intervals as short as 6 months.

Changes in the creatine/creatinine ratio with age. Average values of the creatine/creatinine ratio at increasing ages are shown in Table 1 and Figure 1. In these children the average creatine/creatinine ratio increased between the ages of 13.5 and 14.5 years in both boys and girls. Although the average values decreased gradually after the age of 14.5 years, it is worthy of note that some of the children were still excreting appreciable amounts of creatine at the age of 18 years. The ratio was usually higher for girls than for boys but the difference is not statistically reliable. While the gradual decrease with chronological age in the average values for the creatine/creatinine ratio does not exclude the possibility that in individual children the excretion of creatine ceases abruptly, examination of individual age curves failed to indicate any such tendency. In other words, the downward trend in creatine excretion was gradual in the individual as well as the average growth curves. Examples of such individual curves are presented in Figure 5 of a following section.

Relationship between creatine/creatinine ratio and basal oxygen consumption. Since it has been shown that creatine excretion is increased in hyperthyroidism (41) and decreased in

[4] *Similar correlations for creatine or creatinine content of the urine specimens expressed as mg. per 100 cc ranged between 0.37 ± .10 and 0.59 ± .08. This offers evidence of the increased reliability of the creatine/creatinine ratio.*

TABLE 1

AGE CHANGES IN CREATINE/CREATININE RATIO

Age	Creatine/Creatinine Ratio			
	Boys		Girls	
	Mn	σ_{Mn}	Mn	σ_{Mn}
13.5	.0006	.010	.0018	.010
14.0	.0376	.010	.0522	.011
14.5	.0876	.011	.1060	.018
15.0	.0852	.010	.0882	.012
15.5	.0596	.008	.0707	.011
16.0	.0621	.010	.0883	.012
16.5	.0617	.008	.0480	.009
17.0	.0436	.008	.0740	.010
17.5	.0461	.009	.0727	.011
18.0	.0205	.010	.0163	.015

cretins (44), the correlation between the creatine/creatinine ratio and the basal metabolism was calculated. The correlation coefficients ranged between 0.10 ± .08 and 0.25 ± .06 at different ages of the children in the present study. All the coefficients were positive, but their magnitude was too low for effective prediction. In order to test the possibility that creatine/creatinine ratio was correlated with changes in basal metabolism in the same individual, the individual growth curves for basal metabolism and creatine/creatinine ratio were compared. Although instances were found in which periods of rapidly decreasing basal metabolism were associated with diminished creatine/creatinine ratio, there were also many instances in which rapid changes in basal metabolism were not associated with any systematic change in creatine/creatinine ratio - or the change was in the opposite direction. Hence, no significant relationship between either level of basal metabolism or change in basal metabolism and creatine excretion could be demonstrated in the normal children of the present study.

Relation between creatine/creatinine ratio and rate of growth. Growth rates were estimated for each child by calculating the increment per 0.1 year in the anthropometric measurement under consideration. Figure 2 shows a plot of the average increments in stem length and weight in the boys of the present study. This curve shows that the maximum in creatine excretion observed in boys occurs at about the same time as the maximum growth in stem length, but lags behind

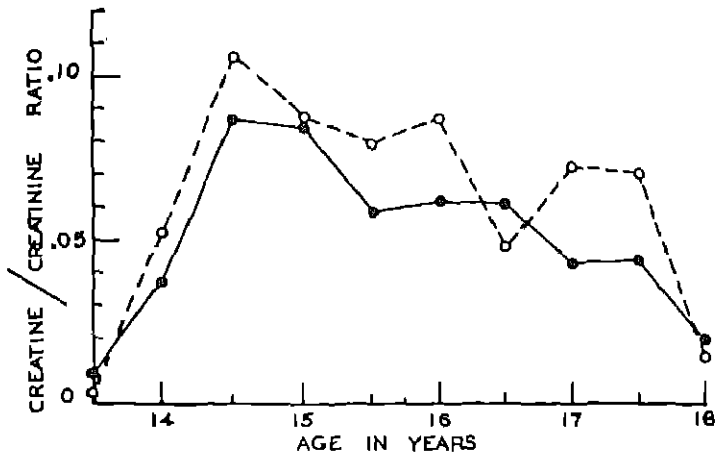

Figure 1. Age changes in creatine/creatinine ratio. Average curves for boys and girls: ●——● Boys; ○— — —○ Girls.

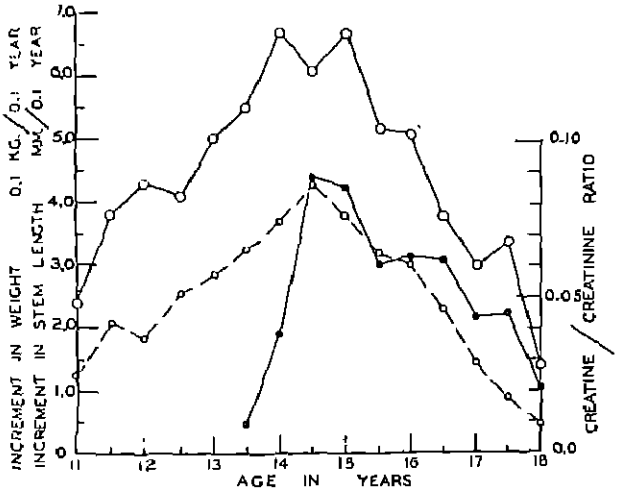

Figure 2. Relationship between growth increments and creatine/creatinine ratio in boys. Average curves: ○— — —○ Growth increment in stem length; ○——○ Growth increment in weight; ●——● Creatine/creatinine ratio.

the period of maximum growth in weight. Since no urine analyses were made at the early ages when maximum growth rates were present in the girls, data for a similar analysis were not available.

Relation between creatine/creatinine ratio and increments in muscle strength. Muscle strength measurements were made with the hand dynamometer. Three trials were made with right hand grip, left hand grip, thrust, and pull. The sum of the highest values (in kgs.) for each measure was used as the strength score. Growth curves for muscle strength were estimated by determining the increments in strength in kgs. per 0.1 year. Figure 3 shows the average increments in strength for boys at each age. Examination of these curves shows a correspondence between increments in strength and creatine excretion. Sufficient observations on the girls at early ages were not available to permit a similar analysis.

Relation between creatine/creatinine ratio and maturity. Since creatine measurements were not obtained until the children of the study had reached the age of 13 years, and since 80 per cent of the girls in the study attained sexual maturity (as indicated by first menstruation) before the age of 13.5 years, an analysis of the creatine data on the basis of age deviation from menarche was not feasable.[5] However, examination of individual growth curves of creatine excretion in the girls of the study with menarcheal ages greater than 13.5 years showed a definite rise in creatine excretion just prior to menarche followed by a rapid fall. Sample growth curves for individual children are shown in Figure 4.

It was also found that girls who had matured early showed lower creatine excretion at all ages for which data were available than girls who matured late. Figure 5-A compares the average creatine/creatinine ratio for a group of 8 girls who matured early (mean age at menarche = 11.5 years) with the average creatine/creatinine ratio of a group of 8 girls who matured late (mean age at menarche = 14.6 years). This curve shows that the creatine/creatinine ratio is lower in the early maturing girls between the ages of 14 and 16 years. When the age of maximum increase in stem length is used as the criterion of early or late maturity (37), similar results are obtained for both boys and girls, i.e., early maturing children show lower creatine/creatinine ratios than do late maturing children (see Figure 5-B and C).

[5] *Such an analysis has been presented for basal metabolism, pulse rate, blood pressure, etc., in a previous publication (36).*

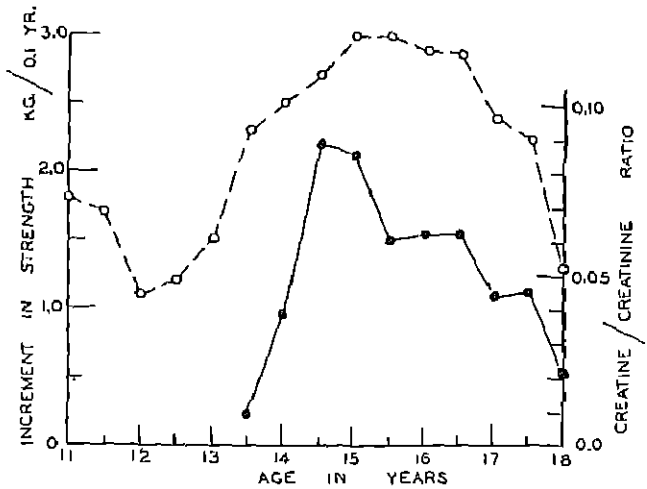

Figure 3. Relationship between increments in muscle strength and creatine/creatinine ratio in boys. Average curves; O— — — —O Increment in muscle strength; ●———● Creatine/creatinine ratio.

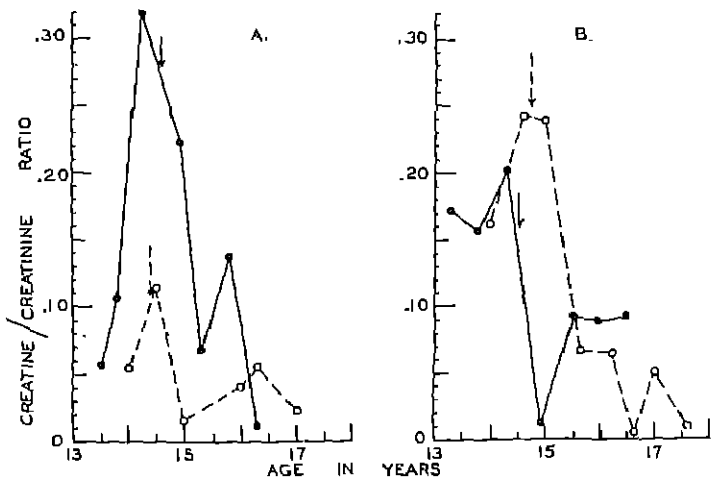

Figure 4. Individual growth curves of creatine/creatinine ratio in late maturing girls. Curves showing fall in creatine/creatinine ratio after beginning of menstruation. Arrow indicates age at first menstruation. A. ●———● Case 139; O— — —O Case 217. B. ●———● Case 103; O— — —O Case 127.

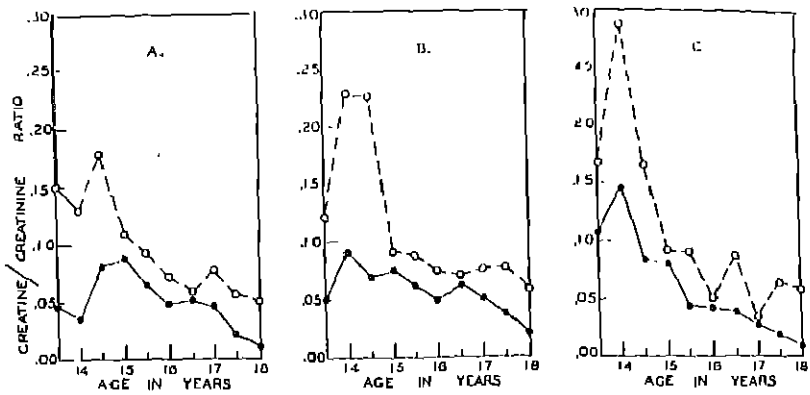

Figure 5. Average creatine/creatinine ratios in early and late maturing children. A. Girls - maturity groups based on age of first menstruation: ●——● Average creatine/creatinine ratio of 8 girls with mean age of menarche of 11.5 years; O— — —O Average creatine/creatinine ratio of 8 girls with mean age of menarche of 14.6 years. B. Girls - maturity groups based on age of maximum growth rate in stem length: ●——● Average creatine/creatinine ratio of 8 girls with mean age of maximum growth in stem length of 11.4 years; O— — —O Average creatine/creatinine ratio of 8 girls with mean age of maximum growth in stem length of 14.1 years. C. Boys - maturity groups based on age of maximum growth rate in stem length: ●——● Average creatine/creatinine ratio of 8 boys with mean age of maximum growth in stem length of 13.5 years; O— — —O Average creatine/creatinine ratio of 8 boys with mean age of maximum growth in stem length of 16.0 years.

Discussion

Creatine appears in the urine of infants within the first few days of life (34, 38), and continues to be present throughout childhood (13, 16, 17, 20, 22, 28, 30, 39, 42, 43). However, in these studies relatively few children were observed at each age level, and in none were observations repeated on the same child. Calculation of the creatine/creatinine ratio from observations in the above papers yield high values (range: .124 - .790) for children even up to the age of 15 (see Table 2). The only systematic study of cretinuria in adolescents is that of Light and Warren (20). Re-calculation of their data shows creatine/creatinine ratios progressively diminishing from .113 at age 14 to

TABLE 2

CREATINE/CREATININE RATIOS IN CHILDREN
(RE-CALCULATION OF DATA FROM THE LITERATURE)

Age	Boys			Girls		
	N	Mean Ratio Creatine/Creatinine	Reference	N	Mean Ratio Creatine/Creatinine	Reference
1.5	1	.329	Rose (30)	2	.790	Rose (30)
3	-	--	---	2	.742	Rose (30)
4	1	.632	Rose (30)	-	--	---
5	1	.422	Rose (30)	1	.263	Rose (30)
5	1	.162	Taylor (39)	-	--	---
7	-	--	---	3	.582	Rose (30)
8	-	--	---	2	.572	Rose (30)
8	-	--	---	2	.249	Taylor (39)
9	-	--	---	2	.395	Wang, Frank, Kern and Hays (42)
10	3	.213	Rose (30)	-	--	---
11	2	.223	Rose (30)	2	.237	Rose (30)
11	-	--	---	2	.666	Wang, Genther and Hogden (43)
12	1	.737	Rose (30)	1	.616	Rose (30)
12	-	--	---	10	.718	Wang, Genther and Hogden (43)
13	1	.124	Rose (30)	3	.246	Rose (30)
13	-	--	---	6	.681	Wang, Genther and Hogden (43)
14	1	.511	Rose (30)	4	.487	Wang, Genther and Hogden (43)
14	5	.113	Light and Warren (20)	-	--	---
15	1	.445	Rose (30)	2	.367	Rose (30)
15	11	.076	Light and Warren (20)	1	.236	Wang, Genther and Hogden (43)
16	10	.065	Light and Warren (20)	-	--	---
17	7	.033	Light and Warren (20)	-	--	---
18	1	.014	Light and Warren (20)	-	--	---

.014 at age 18, as shown in Table 2. These results are in agreement with the present study. The low values of the creatine/creatinine ratio which were obtained in the 13-13 1/2 year-olds of the present study were not observed by others in the few cases where measurements have been made on children of this age. Hence, it is clear that additional observations should be made on children ages 8-14 to determine whether creatine excretion diminishes at this age to rise again during the adolescent period.

Although it has been shown that creatine excretion is increased in hyperthyroidism (8, 13, 15, 25, 41), and decreased in hypothyroidism (33, 44), no correlation between basal metabolic rate and creatine/creatinine ratio could be demonstrated in the present study. This lack of correlation may be due to the restricted range of basal metabolism measurements found in a group of normal children.

The concept that creatine disappears abruptly from the urine with the attainment of sexaul maturity is not supported either by the data from the literature or the present observations (see Tables 1 and 2). However, the degree of creatinuria of normal adults on ordinary diets is much less than that of children and the tolerance to ingested creatine is much greater in adults than in children. Remen (29) and Krause (16, 17) have shown that normal adult males excrete no more creatine on days when creatine was given in the diet than on previous days. On the contrary, when creatine was fed to children or castrates (28), it was largely excreted in the urine unchanged. Beumer and Fasold (4) and Fasold (9) have shown that in precocious children without signs of sexual development, creatinuria is present, while in precocious with accelerated sexual development as well, spontaneous creatinuria disappeared and ingested creatine was not excreted as such. In senile individuals with diminished sexual function, spontaneous creatinuris reappears in both men and women and ingested creatine is again excreted as such (5, 19, 21, 31, 32, 45). A number of experimenters have been able to bring about the disappearance of the spontaneous creatinuria in old men by the administration of male sex hormone. Creatinuria continues throughout life in eunuchs but is diminished when sex hormones are administered (28). These experiments lend support to the view that creatine utilization in the body is associated with the functional activity of the sex glands.

The results of the present study show that with attainment of sexual maturity, diminution in creatine excretion follows. It is also shown that in early maturing individuals creatine excretion is less than in late maturing ones. Although the creatine/creatinine ratio cannot be used as a single index of maturity, when taken in conjunction with other physiological indices, such as growth rate, strength, increments, basal metabolism, osseous development, etc., it may aid in establishing the degree of maturity of the individual.

Summary

Measurements of creatine and creatinine were made on morning urine specimens from 30 girls and 40 boys. Urine specimens were collected on each of two successive mornings at 6-month intervals in the same children between the ages of 13.0 and 17.5 years. The ratio of creatine to creatinine content of the same urine sample was calculated and used in the data analysis. Results showed a maximum in the average output of creatine in both boys and girls at the age of 14.5 years, which in the boys was associated with maximum growth rate in stem length. In both boys and girls maximum creatine/creatinine ratios were found associated with periods of maximum increase in muscular strength. No correlation between creatine/creatinine ratio and basal metabolism could be demonstrated. In late maturing girls, there was an increase in the creatine/creatinine ratio either before or at menarche, followed by a rapid fall thereafter. In both boys and girls, children who matured early showed lower creatine/creatinine ratios at a given chronological age than those who matured late.

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LEVEL OF ASPIRATION IN RELATION TO PERSONALITY FACTORS IN ADOLESCENTS[1]

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Introduction

The aim of this study was to compare the level of aspiration behavior of adolescents differing in selected personality characteristics. Level of aspiration was defined as "the level of future performance in a familiar task, which an individual explicitly undertakes to reach" (1).

Previous studies (1, 2, 3, 5) have indicated that the level of aspiration behavior may be related to underlying personality factors and that it may be used by the subject as an "Ego-protective mechanism," or as a method for maintaining self-esteem and security. The purpose of the present study is to investigate such possible relationships between level of aspiration behavior and certain measures of personality adjustment in adolescents.

The task used in this study consisted of a modified symbol-substitution exercise, using shorthand symbols. It was especially constructed for this study.[2]

Personality adjustment was determined by the Rogers Test of Personality Adjustment (4). Only those subjects making high total scores, (indicative of mal-adjustment), and those making very low scores (indicative of better than average adjustment), were selected as subjects. Additional criteria, such as teachers' ratings, and classroom observations, were used to supplement the test scores.

Subjects

The Rogers Test of Personality Adjustment was administered to the entire seventh and eighth grades of the University High School. Thirty-two subjects were selected from the two grades. They included all subjects whose total scores ranged below 34 ("well-adjusted") and above 40 ("mal-adjusted"). These scores were all corroborated by the teachers' ratings and seemed to reflect feelings of security and insecurity, respectively. The

[1] *This study was directed by Dr. R. H. Ojemann at the Iowa Child Welfare Research Station.*

[2] *A detailed description of the test and procedure can be found in the master's thesis on file in the University of Iowa Library.*

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ages of the subjects ranged from 12 to 14 years. The group consisted of eleven girls and twenty-one boys.

The Task

The shorthand task consisted of a graded series of cards, containing letters of the alphabet arranged in random order. The subject was required to substitute shorthand symbols for these letters. A reference card, with the letters and symbols arranged alphabetically, was available to the subject throughout the experiment. Each subject was given a practice period in which to become familiar with the symbols. He was instructed that he was not to memorize, merely to write as many symbols as possible in one-half minute. Ten trials, which were timed, constituted the test series.

The specific instructions for all subjects were as follows:

> "Now I think you are ready to start. On these cards I have the letters of the alphabet arranged in different combinations and all lines are equally difficult. The only difference is that on this card there are 5 letters to a line, on the next 6, etc., up to 15. Now I shall time you to see how many symbols you can write in one-half minute. ... You can choose any card you wish, but I first want you to tell me each time how many letters you expect to do on the next trial. ... I will record the total number of symbols you write on each trial as your score. The idea is to write as many symbols as you can in one-half minute, but also to be as accurate as possible. You will have ten trials."

A record was kept of the subject's estimates and performance. The score was announced as the experimenter wrote it down opposite the estimate previously made. No effort was made to conceal the record from the subject at any time. After each trial, the question was repeated, "Now what do you expect to do next time?"

At the end of the ten trials, the experimenter asked each subject to write as many of the symbols as he could recall without a reference card.[3] He was praised and told that he had done "as well as others in your class," or "better than average," depending on his particular personality needs. The subjects were instructed not to discuss the experiment with anyone, in

[3] *The data were tested as to differences between the two groups in the number of symbols learned, but the difference was not significant.*

order to avoid the setting up of a group average, or standard. All subjects seemed to enjoy the test, probably because it was presented to them as a test to determine how well they could learn to write shorthand. They seemed highly motivated.

Results

The data thus obtained were analyzed as follows:

1) D-scores, defined as the average discrepancy between the estimate and the preceding performance, were calculated by dividing the algebraic sum of discrepancies on each trial by the total number of discrepancies (i.e., 9). The reliability of these scores for both groups combined was found to be .88, as determined by the split-half method and corrected by the Spearman-Brown formula.

For comparison of the two groups, the mean D-scores were calculated by dividing the algebraic sum of the individual D-scores by the number of subjects in each group (N=16).

The results presented below show a statistically significant difference between the two groups:

	Maladjusted[4] Group (N=16)	Well-adjusted[4] Group (N=16)
Mean D-score	0.08	1.14
Difference	1.06	
"t"	3.155	
Significance	beyond 1%	

These data would seem to indicate that, although both means are on the positive side, the maladjusted subjects tended to average approximately zero as a result of making very large over-estimates and under-estimates, whereas the well-adjusted subjects tended to have low-positive mean D-scores, as a result of more or less consistent positive discrepancies. In other words, the maladjusted subject tended to keep his estimates below his performance level, or to make gross compensatory over-estimates. Only in the maladjusted group did negative D-scores occur, whereas none of the well-adjusted subjects showed negative D-scores. This may indicate that for certain maladjusted subjects a possible explanation may be found in their

[4]*The terms "mal-adjusted" and "well-adjusted" shall be used henceforth for convenience in designating those with high and low Rogers scores respectively.*

fear of failure and greater need for success. Thus, by manipulating their estimates, they are able to protect themselves against failure and to insure successes, lending support to the hypothesis that the level of aspiration is an "ego-protective mechanism." (Gould, 1939.)

The well-adjusted subjects, on the other hand, tended more or less consistently to keep their estimates slightly above their performance level. These positive discrepancies appeared to serve the function of incentives, rather than over-estimates, and tended to be realistic, i.e., only one or two points above the previous performance level. Probably one reason that these subjects are able to maintain a positive discrepancy, even despite failures, may be due to their greater feeling of security and self-confidence.

2) Average deviations, defined as the average of the deviations of the individual discrepancies from the D-score, were used as an index of variability. They were calculated by dividing the absolute sum of the deviations from the D-score, disregarding direction of difference, by the number of deviations (i.e., 9). This measure seems important, since two subjects with equal D-scores may have significantly different average deviations.

For comparison of the two groups, the mean of the individual average deviations was calculated for each group. The results are presented below, again showing a statistically significant difference between the two groups:

	Maladjusted Group (N=16)	Well-adjusted Group (N=16)
Mean of average deviations	1.24	0.78
Difference	0.46	
"t"	3.833	
Significance	beyond 1%	

These results seem to indicate that the maladjusted subjects tended to show significantly greater variability in their deviations from the D-score than the well-adjusted subjects. In other words, the maladjusted subjects tended either to over-estimate their ability, creating large positive discrepancies, or to underestimate their ability, yielding large negative discrepancies. The low variability, characteristic of the well-adjusted subjects, probably indicates little more than individual variations and lack of rigidity.

3) Reactions to success and failure. Success was defined as covering all those cases in which performance surpassed the

previous estimate. Success was differentiated from "achievement," which comprised all those cases in which performance was equal to the previous estimate. Failure was defined as covering all those cases in which performance fell below the previous estimate. These operationally defined criteria for success and failure were in most cases corroborated by the subjects' verbal reactions, which were recorded verbatim as the score was announced. "Achievement" was usually experienced as success; the distinction was made chiefly to differentiate between the frequency of successes and achievements in each group. Successes seemed to be more characteristic of the maladjusted subjects, while achievements seemed to characterize the well-adjusted group. The differences in the distribution for success, achievement and failure were found to be statistically significant at the 1 per cent level, as presented below:

	Distribution of Successes		Achievements and Failures	
Group	Total No. possible	Total No. of Successes	Total No. of Achievements	Total No. of Failures
Maladjusted	144	59	20	65
Well-adjusted	144	31	42	71

X^2 = 10.3, significant at the 1% level

Reactions to success and failure tended to show significant differences when analyzed in terms of the manner in which the new estimates "E" were shifted in relation to the previous estimate "e." The pertinent data are presented below:

		Reactions to Success		
Group	Total No. Successes	No. of times "E" raised above "e"	No. of times "E" remains equal to "e"	No. of times "E" lowered below "e"
Maladjusted	59	46 (78%)	9 (15%)	4 (7%)
Well-adjusted	31	31 (100%)	0 0	0 0

X^2 = 5.41, significant at the 5-10% level

Reactions to success indicate that the well-adjusted subjects tended to raise their estimates after success 100 per cent of the time, whereas the maladjusted subjects again appear to have been less consistent and even occasionally (7%) to have lowered their estimates after success.

More significant, and possibly of diagnostic value, are the

reactions to failure, as presented below:

Group	Total No. Failures	Reactions to Failure: No. of times "E" raised above "e"	No. of times "E" remains equal to "e"	No. of times "E" lowered below "e"
Maladjusted	66	13 (20%)	15 (23%)	37 (57%)
Well-adjusted	71	5 (7%)	46 (65%)	20 (28%)

$X^2 = 21.8$, significant at the 1% level

These data seem to indicate that the maladjusted subjects tended to be much more sensitive to failure, since they lowered their estimates immediately in over 50 per cent of the cases. On the other hand, they tended to compensate for their failures by raising their estimates after failure significantly more often than the well-adjusted subjects. The latter, in contrast, tended characteristically to keep their estimates steady, i.e., they maintained the same estimates and "tried again" despite failure. Only infrequently, and usually after successive failures, did they lower their estimates somewhat. Inspection of the raw data indicates that the maladjusted subjects made much larger and more irregular shifts in their estimates, whereas the well-adjusted subjects tended to make more realistic and smaller adjustments of their estimates in relation to the previous performance.

Qualitative Interpretation of Results

In order to supplement the above quantitative analyses, certain qualitative analyses were made. The subjects were divided according to their D-scores into 1) high-positive, 2) low-positive, and 3) negative discrepancy groups. The data relative to their personality characteristics were derived from certain pertinent questions on the Rogers test, their verbal reactions to the task, etc. In addition, the subjects' I.Q.'s and grade point averages were available.[5]

1) High-positive discrepancy group. A high-positive D-score was defined as any score above +1.1. Of the total group (N=32) twelve subjects fell into this group, five of whom were classified

[5] *It should be noted here that the correlation between I.Q and Rogers score (total) was r = .01, and between grade point average and Rogers score (total) was r = .38. Consequently, these measures may be regarded as relatively independent of the Rogers scores.*

as maladjusted, and seven as well-adjusted. The maladjusted subjects in this group tended to give verbal evidence of insecurity and to show a need to compensate for failures by raising their estimates after failure.

The well-adjusted subjects in this group, on the other hand, tended to show more "tolerance" for failures. Their verbal reactions showed that they were more determined and they did not tend to compensate for failure by raising their estimates.

2) Low-positive discrepancy group. A low-positive D-score was defined as any score ranging from +0.1 to +1.0. Fourteen of the total group fell into this group, with nine being well-adjusted and five mal-adjusted.

The maladjusted subjects in this group constituted a very mixed group and are difficult to describe. The well-adjusted subjects, however, were all characterized by self-confidence and realistic estimates, evidenced by the preponderance of "achievements" over successes.

An interesting and noteworthy difference between the subjects in this group, was found in the type of answers given to the question as to what they wanted to be when they "grow up." The well-adjusted subjects all gave very specific and concrete answers, viz. "research chemist, violinist, ice skater," etc., and in general these tended to be somewhat in accord with their abilities. The maladjusted subjects, on the other hand, without exception checked rather vague generalizations and ideals, such as "I want to be a leader in whatever town I live in," or "I want to be a very great person whom people will talk about" [question 4, Rogers Test (4)].

Thus it appears that the well-adjusted subjects tended to be more realistic, both in their appraisal of their abilities and in their level of aspiration behavior, while the maladjusted subjects seemed to be somewhat unrealistic and gave evidence of more than average cautiousness.

3) Negative discrepancy group. A negative D-score was defined as any score with a minus sign. All the six subjects falling into this group were mal-adjusted and in every case showed evidence of great insecurity. They were characterized by a tendency toward self-depreciation and a somewhat self-conscious attitude.

The manner in which they manipulated their estimates seemed to indicate a fear of failure and a need to insure success by keeping their estimates below their performance level. In view of the fact that none of the well-adjusted subjects fell into this group or showed a negative D-score, the hypothesis may be advanced that a negative D-score might be indicative of personal insecurity and maladjustive tendencies. This, however, would

have to be further tested with larger groups of subjects.

Summary

Level of aspiration behavior was studied in relation to personality adjustment in adolescents, as determined by the Rogers Test of Personality Adjustment. The task consisted of a modified symbol substitution task, referred to as the shorthand task.

The results indicate that the differences in D-scores and average deviations are significant at the 1 per cent level between the two groups.

Reaction to failure showed characteristic tendencies toward compensation and/or fear of failure in the maladjusted subjects, in contrast to greater realism for the well-adjusted ones. A negative discrepancy was found to be characteristic of the maladjusted subjects only.

Generally, it appears that the level of aspiration behavior seems to reflect underlying personality needs and wants, and that it might be used as another measure of personality adjustment (as defined in this study). Furthermore, these findings suggest that it should be possible to test the hypothesis that, as the personality needs and wants are changed by appropriate training or experiences, a change in the level of aspiration behavior would appear.

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SCHOOL ABSENCE DUE TO SICKNESS IN THE WAR YEARS

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U. S. Public Health Service

Illness in school children provides a sensitive index of the population's health level; such data, as measured in turn by school absence, have been collected in Hagerstown, Maryland, since October 1939. The present paper reports the over-all aspects of the data for five school years - October 1940 to May 1945.

The methods and the scope of the study have already been described in earlier publications (1, 2). Absenteeism among the school children of Hagerstown has been studied off and on for some twenty years by the U. S. Public Health Service. This city was selected in 1921 for one of the first morbidity surveys in the country because it was considered a typical community, neither completely industrial nor completely agricultural and having, in addition, a high proportion of stable American-born stock. Studies pertaining to other aspects of public health have been continued there since for this same reason, and especially because the civic and school authorities, the health department, and the population itself have all demonstrated a high and unusual degree of cooperation. While the war brought on an increased degree of industrialization, there was no great increase in the population - from 32,500 to 40,000 people.

The data are based on excuse slips which each absentee had to bring with him when he returned to school. The excuse slip provided information on the reason for absence, and in case the absence was due to sickness, told what the illness was, how long the child was ill, and whether a physician was called. These absence slips were collected monthly and tabulated. While a check was made with the physician whenever it appeared warranted, it is obvious that only broad categories of disease can be employed in the study of these data. As for the accuracy of the written excuses, what Collins said in 1924 still holds true: "A teacher, particularly in the lower grades, is usually familiar with a great many of the details of the lives of her pupils, and it is felt that she is therefore in a position to get an accurate report as to whether the absence was due to sickness or some other cause" (3).

For the purpose of this paper, the illnesses - because they are so frequently given inexactly on the excuse slips - will be presented in five principal groups. The respiratory diseases

make up the first two groups: "colds" and "other respiratory." In the latter are included grippe, influenza, pneumonia, bronchitis, etc. The third category, "digestive," consists of the gastro-intestinal disturbances, often indefinite, to which children are so prone. "Headaches" occur frequently enough to be set up as a fourth category. The major communicable diseases which affect children are included in the fifth category, "other sickness." This category covers chickenpox, mumps, measles, and a miscellany of conditions not covered elsewhere.

All the white elementary schools and the junior high schools were included in the study. Table 1 shows the average enrollment for the school years 1940-1945. The months of September and June were not included because of the preoccupation of the school authorities with opening and closing the school year. For reasons beyond control the study could not be completed for the school year 1941-42, but had to be cut off at the end of February 1942. It will be observed from the table that the data being presented are based on an annual enrollment of about 6,500 children. The average school month was 20 days, making the average monthly number of children-school days approximately 130,000.

TABLE 1

ATTENDANCE IN HAGERSTOWN, MARYLAND, SCHOOLS IN A FIVE-YEAR PERIOD* (WHITE CHILDREN ONLY)

Age (years last birthday)	Average number of children				
	1940-41	1941-42	1942-43	1943-44	1944-45
All ages	6,505	6,669	6,507	6,168	6,465
Under 8	1,459	1,413	1,528	946	1,089
8 and 9	1,092	1,102	1,086	913	1,025
10 and 11	1,114	1,133	1,218	1,051	982
12 and 13	1,233	1,305	1,241	1,316	1,308
14 and over	1,607	1,716	1,434	1,942	2,061

*Based on the months October through May for 1940-41 and 1942-45, and October through February for 1941-42.

One rate is employed throughout for the sake of simplicity (except in Table 3), namely, the number of days absent because of sickness per 100 children-school days. Thus, the data will show the total effect of the different diseases upon school ab-

sence, rather than their incidence. For any specific cause the formula is:

$$\frac{\text{Days absent in month for specific cause} \times 100}{\text{Children enrolled} \times \text{number of school days in month}}$$

The rates for all ages combined have been adjusted to the age distribution of all the white children attending Hagerstown schools in 1940-41 (boys and girls). This adjustment is made by 1) calculating the age specific rate for the years following 1940-41, 2) multiplying each age specific rate by the proportion of children in that age group in 1940-41, and 3) summing these products to get the adjusted rate for all ages combined.

The rates for the different causes vary widely and there are marked differences in their effect upon the rates for "all sickness." The percentage distribution of days of illness by cause, for the five years combined, is shown for each month in Table 2. In the Fall, the respiratory conditions account for 40 to 50 percent of all days of absence due to sickness; in the Winter they are accountable for over 60 percent of such absence; in the Spring the percentage is about 30. Absences due to digestive disturbances and headaches are highest relatively at the beginning and end of the school year taking in 20 percent of all sickness-days. Other sicknesses reach their peak in the Spring when half of all days of sickness absence may be ascribed to these causes. At this time of the school year, the incidence of such communicable diseases as measles and whooping cough is highest.

TABLE 2

PERCENTAGE DISTRIBUTION OF DAYS LOST IN EACH SCHOOL MONTH ACCORDING TO BROAD SICKNESS CATEGORIES HAGERSTOWN WHITE SCHOOL CHILDREN, 1940-45

Sickness category	School month:							
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May
Colds	26.0	28.7	32.9	38.2	30.6	25.8	18.3	15.1
Other respiratory	18.1	21.5	34.3	26.7	25.8	24.0	18.3	17.4
Digestive	15.2	13.8	8.1	9.0	10.9	12.5	12.4	16.4
Headache	5.5	4.5	3.3	2.9	3.7	3.9	3.8	5.3
Other sickness	35.2	31.5	21.4	25.2	29.0	33.8	47.2	45.8
All sickness	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Absenteeism Rates 1940-1945

In Figure 1 are shown the month by month absenteeism rates during five school years. The figure consists of six panels, one for absenteeism due to sickness of any kind and one for each of the categories into which the illnesses have been divided as described above. Each line in a panel describes a different year.

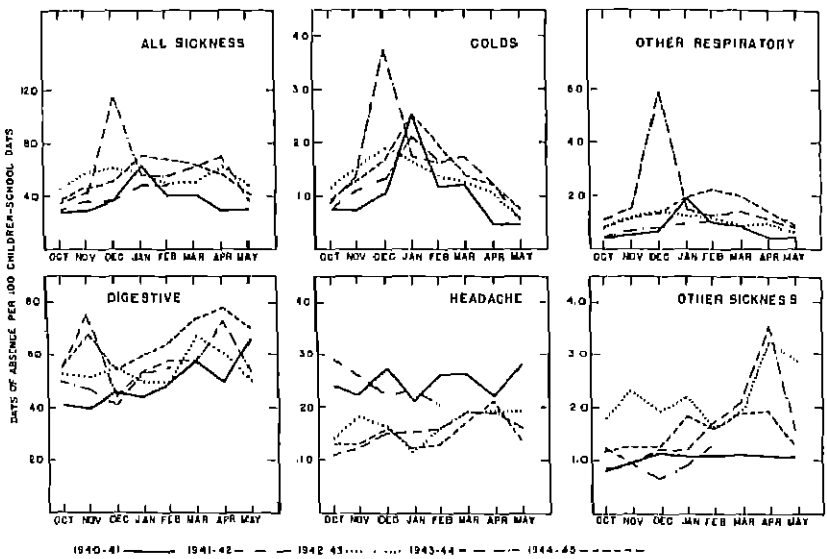

Figure 1. Days of absence due to sickness per 100 children-school days: all causes and certain broad groups of causes. Hagerstown white school children, 1940-45.

All sickness. A not unexpected finding for this climate is that absence from school for reasons of illness occurs most frequently during the winter months. The respiratory diseases, it has been pointed out, are the greatest contributory factors in the all-illness rates, and these diseases customarily take their highest toll during December, January, and February. The

school year 1943-44 was marked by a short-lived but sharp outbreak of influenza and grippe in December. In that year, the rate for all sickness rose from 3.3 days of absence per 100 children-school days in October to 11.3 in December, and dropped to 5.3 in January. Largely because of an upturn in measles incidence, there was an increase in the rate to 6.8 in April, followed by a decrease to 3.5 in May. In 1944-45, when apparently no serious outbreaks of any disease occurred, there was an almost regular rise in rate from 3.6 days in October to 6.9 days in January, followed by more gradually decreasing rates to 3.7 days in May.

Colds and other respiratory diseases. The effect that the respiratory diseases has on the total picture of morbidity in school children is brought out strikingly by the similarity between the graphs for these diseases and the graph for all sickness (with exceptions in the Spring months). Colds, of course, are by far the greatest single cause of school absence due to illness. In addition, the incidence of the other respiratory diseases, for many of which "colds" are a preliminary manifestation, is highly connected with the incidence of colds. The association is partly due to differences in reporting what was very likely the same cause; e.g., there is clear correspondence between the reporting of influenza and of colds in December 1943, owing to the similarity in their manifestations.

Digestive disorders. The amount of absence for digestive disorders is quite serious; in the beginning and end months of the year they account for a sixth of all illness absenteeism. Differences among the years are small, although between 1940 and 1945 there is to be remarked a tendency for the over-all rates to increase. In 1940-41, the range in rates was from 0.39 to 0.66 days per 100 children-school days; in 1944-45, they ranged from 0.55 to 0.77.

Headaches. The absence rate because of headaches is fairly constant through the school year. However, a trough is to be observed in mid-year, suggesting the existence of some kind of inverse relationship between headaches and colds, in the sense that when colds are prevalent, they furnish a more urgent excuse for absence for those children prone to headaches. A similar situation would appear to exist for the digestive diseases.

Other sickness. This group shows little seasonal trend outside a tendency to rise slightly in the spring of "normal" years. Peaks in the curves for other years can usually be traced to outbreaks of some communicable disease; in the present instance, the high peaks to be observed for April 1943 and 1944 were due to outbreaks of measles.

Other absences. To complete the picture of school morbidity

it is necessary to point out the extent of absenteeism which was not attributed to illness. Such absence maintains a fairly even rate of 2 to 3 days per 100 children-school days. It reaches its peak in December and January, presumably because of weather conditions and also because of a desire on the part of the parents to prevent infection during outbreaks of colds and influenza.

Age Differences

Figure 2 shows the rates for illness absenteeism among five age groups. In general, colds and "other sickness" drop sharply

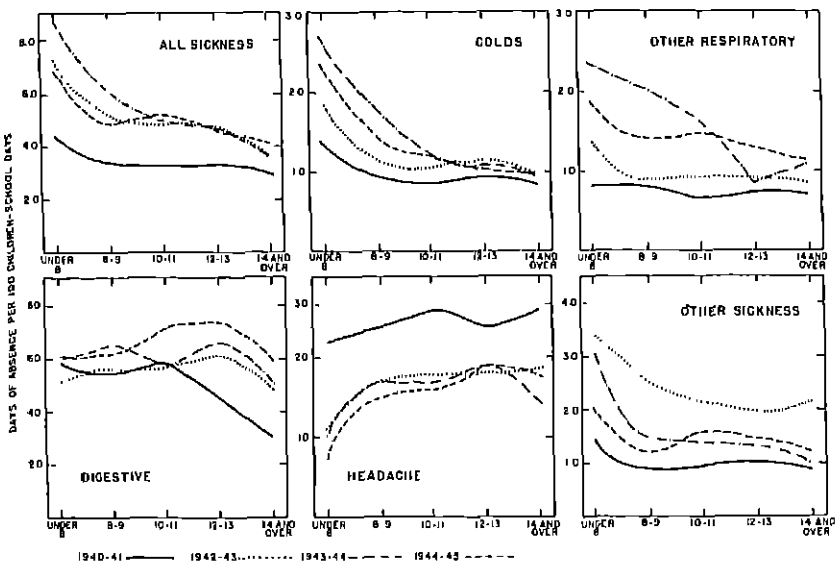

Figure 2. Age differences in absence due to sickness: all causes and certain broad groups of causes. Hagerstown white school children, 1940-45.

after the age of 7 years, or the first two years of school, level off at ages 8 through 13 years and drop again after 13 years.

Children 6 and 7 years old are absent because of illness on an average of 6 days per 100 children-school days, children 8 through 13 years average about 4.5 days, and children over 13 (attending elementary and junior high schools) about 3.5 days. Colds account for 2 days of absence per 100 children-school days in the youngest group, for 1 day of absence in the oldest group.

Other respiratory diseases present a similar pattern to that for colds, but the differences between the older and younger children are less marked. Absence due to digestive disorders

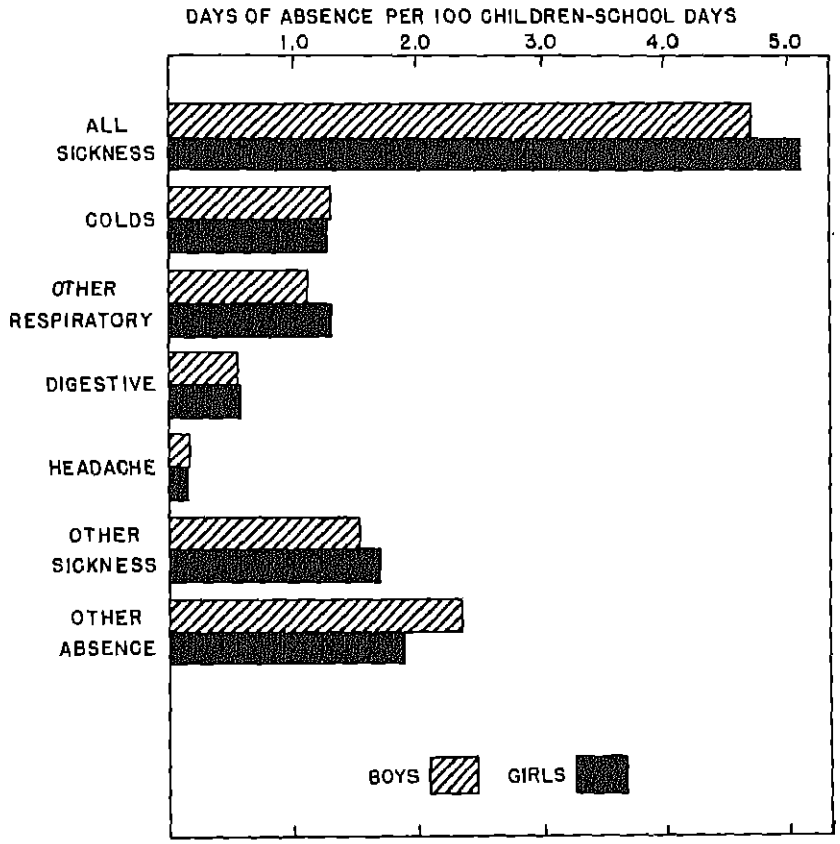

Figure 3. Differences between boys and girls in absence due to sickness: all causes and certain broad groups of causes. Hagerstown white school children, 1940-45.

and headaches are inclined to rise with age, although absence due to the former does not increase very sharply.

Sex Differences

The higher absenteeism among girls shown in Figure 3 is in agreement with the well-known findings of other investigations. For all sickness combined, this excess is about 0.4 of a day per 100 children-school days. As Figure 3 shows, it is largely the sum of an excess in days lost for other respiratory diseases and for other sickness. Differences between the sexes for the other illness categories are not significant. As for absence not due to illness, the boys exceed the girls by half a day per 100 children-school days.

Comparison with Earlier Data

Since records were collected on school absenteeism in Hagerstown in the early 1920's, some gauge can be made of differences that have occurred over an extended time. Table 3 compares the number of days lost per 100 children in a school year for 1923-25, 1939-40, and 1941-45. The data for 1939-40 are shown separately since they have already been so presented (1) and since the observations that were made in that paper are confirmed by the later findings.

TABLE 3

DAYS OF ABSENCE FROM SICKNESS AND FROM OTHER CAUSES IN HAGERSTOWN, MARYLAND, SCHOOLS IN 1923-25, 1939-40, AND 1940-45 (WHITE CHILDREN ONLY)

	Age in years					
	Under 8	8-9	10-11	12-13	14 and over	All ages
Sickness:						
1923-1925	1,060	789	627	610	523	738
1939-1940	1,260	893	721	738	655	824
1940-1945	1,179	869	822	701	660	849
Other causes:						
1923-1925	473	499	504	681	627	557
1939-1940	337	291	362	422	493	396
1940-1945	291	323	390	441	435	362
All causes:						
1923-1925	1,541	1,288	1,131	1,291	1,150	1,295
1939-1940	1,597	1,184	1,083	1,160	1,148	1,220
1940-1945	1,470	1,192	1,212	1,232	1,095	1,231

The most striking fact about the table is the increase in absence due to sickness in all age groups. In the period 1940-45 the relative number of school days lost on account of illness was 15 percent greater than in the school year 1923-25. At the same time, days lost from causes other than sickness decreased by 30 percent. But that is not to say that children (or parents) now attribute to illness what they formerly attributed to other causes. The decrease in the latter is far greater than the increase in absence due to sickness for all but the 10-11 year age group. Moreover, the increase in sickness absence is least and the decrease in absence for other causes highest in the two youngest age groups.

Summary

School absenteeism among white school children in Hagerstown has been examined for the five school years, 1940-45, and compared with earlier studies. In general:

1. Sickness accounts for 4 days of absence per 100 children-school days at the beginning and end of the school year; mid-month rates are higher, about 6 days, but irregular, depending on the incidence of colds and other respiratory diseases. A peak of 11.3 days was reached in December 1943.
2. Colds and other respiratory diseases account largely for the over-all sickness rate during the Winter months. During the influenza outbreak of December 1943, there were 3.7 days of absence per 100 children-school days because of colds and 5.8 days of absence because of other respiratory diseases.
3. Digestive disorders and headaches display no marked seasonal variation, except for a tendency to drop during the winter months. The absence rate for digestive disease is usually 0.5-0.6 days per 100 children-school days. Headaches are responsible for 0.15 to 0.25 days of absence.
4. The course of absence for other sickness is marked by peaks when outbreaks of communicable disease occur. Highest peaks were observed in April of 1943 and 1944 when measles was prevalent. Lesser peaks in the Fall and Winter of the 1942-43 years were caused by mumps and chickenpox.
5. Days lost for sickness are highest in the younger age groups. On the other hand, the relative number of days lost for absence other than sickness increased

with age.

6. School days lost because of sickness are higher for girls than for boys. Boys lose more days for reasons other than illness.
7. A comparison with 1923-25 data shows that in all age groups there has been a considerable increase in absence due to sickness. At the same time a marked reduction has taken place in the days lost for reasons other than illness.

Conclusion

Data on school absence for sickness and other causes in a five year period - of wartime - show a curious admixture of irregularity and consistency. The rates for all morbidity causes from year to year, expressed in this paper as the number of days absent per 100 children-school days, show no definite pattern or direction, each year establishing itself at a different level. Yet on these levels a regular seasonal course can be discerned during years and seasons when no notable outbreaks of disease occurred.

That outbreaks of colds and other respiratory ailments, particularly influenza, were closely connected, through diagnoses or other reasons, can readily be seen. On the other hand, an inverse relationship is to be observed between absence for respiratory causes and for the digestive diseases and headaches.

The age and sex differences that were found confirm other studies. Also confirmed is a tentative thesis based on 1939-1940 data that absenteeism because of sickness had increased over 1923-1925.

No relation to the war is to be discerned in these illness rates; the outbreaks that occurred - in influenza, measles, mumps, chickenpox - were mild in form. The shortage of physicians and the reduction in standards of living in the path of war gave cause to fear the worst concerning the nation's health. Fortunately, those fears have proved in the main to have been groundless.

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CHILD DEVELOPMENT
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